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## I. INTRODUCTION

### Project Objectives

✓ The overall study described in this report was designed to create and evaluate a methodology for the development of task level job performance criteria. The primary objective was to initially develop and later evaluate through field trials instruments and procedures that would provide the Armed Services with more useful measures of job performance than presently existed. The criterion instruments and procedures developed during the course of the study were designed for use in personnel management, systems development, planning, and evaluation rather than for use as a basis for personnel actions that affected the personal careers or compensation of individual servicemen. While the study focused on a limited number of Air Force specialty career ladders, the basic intent was the development of illustrative methodology which could be readily translated across many Air Force specialties as well as to related occupational specialty families across all military services. ↑

### Background

For many years there has been a critical need within all branches of the military services for a reliable and valid system to accurately measure how well individuals perform on the job. Many past studies have attacked this problem with a variety of approaches that have led to a variety of partial solutions. This project was undertaken in an attempt to demonstrate, on the basis of a relatively large scale effort, whether or not a more satisfactory system of job performance assessment could be developed and implemented that would meet the needs of personnel system planners and managers better than previous systems had.

A major distinguishing feature of the approach used was the development of techniques for the assessment of job performance at the job task level rather than at the whole job or major job segment level. This approach was based on a two-fold multiple criterion concept. A primary consideration was the development of a series of separate task performance indices which could be used as multiple, but separate, criterion variables to differentially evaluate a variety of recruitment, selection, classification, training, and assignment policies and programs. A secondary consideration was the development of indices that would allow for task-clustered job segments or



total job performance evaluation indices derived through an appropriate system of summation of separate task indices.

Another distinguishing feature of the approach used was the intended use of the performance data generated. The anticipated use of the criterion data was for evaluation of personnel system policies and programs. Throughout the project attempts were made to convey to all participants the "research only" basis for collecting the performance data. Orientation material and instructions accompanying the field survey instruments tried to convey the concept that the individual's on-the-job performance was in large part a product of the implementation of personnel policies and the operation of personnel programs and systems. The assessment of individual job performance was presented as a way to measure the effect of such policies and program operations rather than as a measure of personal worth or value. To the extent possible, this concept was presented in a manner designed not to depersonalize the process to the point where participants would not be motivated to provide the required data.

While the primary objective of the approach used was to capture whatever variance in job performance existed in the field, a secondary objective was to provide measures that would identify that portion of the total variance attributable to skill and knowledge factors and that portion attributable to motivational factors. Another secondary objective was to obtain some index of task performance stability over time. This was accomplished by including in the overall study a re-administration of the performance assessment procedures approximately one year after the initial administration to all participants who could be located.

It was originally intended that some objective measures of job performance be included in the study for comparison with data obtained from the survey rating procedures. During the course of the study, it was determined that adequate work sample tests did not exist for the career specialties used. The preparation and administration of objective performance tests appeared to be impractical within the scope of the study and was therefore not pursued. Attempts were also made to identify existing records of actual work performance in reasonably objective terms at the task level. The system used in connection with the Air Force On-the-Job Training Program was investigated as a potential source for such criterion indices. The tasks included in the Specialty Training Standards which later became the Job Proficiency

Guides are designed to be used to judge proficiency on the job tasks concerned in the airman's assigned duty position. Judgments for the OJT program are made on a go/no-go basis in terms of minimally acceptable standards for the 3, 5, and 7 skill levels. If the tasks included in the Specialty Training Standards and Job Proficiency Guides were identical with those used by the Job Specialty Survey Division in describing the jobs, these proficiency ratings could become useful task level performance measures. This presupposes that the skill level standards were universally understood and applied in a standardized manner by the enlisted supervisors responsible for making the certification ratings. It also presupposes that such ratings are dutifully recorded in a manner that would make them available to personnel responsible for developing, revising, and evaluating relevant Air Force personnel policies and programs. Unfortunately, the task lists from the two sources are not identical, and the underlying assumptions regarding universally applied standards and the objective recording of the proficiency ratings were not currently being met. *Also, it was not possible to determine whether the underlying assumptions regarding recording of proficiency ratings were being uniformly met.* Since an existing source of objective job proficiency data could not be identified, the concept of including such measures in comparison with survey rating data could not be implemented.

Evaluation of personnel policies and programs is extremely difficult without valid and reliable criterion data at a detailed level. This is particularly true of attempts to differentially evaluate the impact of separate portions of any policy or program, or to evaluate the effect of a total program on separate aspects of overall job performance. Because of the lack of adequate task performance data, classification and test devices are usually validated against the intermediate criterion of school or training performance rather than against the ultimate criterion of on-the-job performance. Diligent efforts are made to relate training course content to job content, but little evaluation is made of the effects of these efforts on actual job performance. Proficiency test items, when used, are rarely validated against actual on-the-job proficiency on those tasks the tests are designed to measure. In general, currently available job performance criterion data make it extremely difficult to definitively demonstrate that airmen with high aptitude scores, high proficiency test scores, or who are formally trained do in fact perform their duty assignment tasks in a manner superior to airmen whose aptitude or proficiency test scores are lower, or whose training was obtained through an OJT program.

In view of these requirements for more detailed performance data and the apparent inability of existing systems to collect such data, the present project was undertaken. The approach used was designed to overcome perceived difficulties with existing data and methods for their collection within the constraints imposed by the need for a methodology which, if successful, could be operationally implemented on a large scale.

## II. METHOD

### Introduction

A detailed summary of the activities concerned with the development of the instruments and procedures used to collect the field data has been previously reported.\* A brief review of these activities is given below.

### Selection of Career Fields to be Studied

An initial activity was the selection of three specialty career ladders upon which the illustrative methodology was to be developed from the 92 ladders for which there was adequate 5 skill level job descriptions based on USAF Job Inventory data. A variety of criteria were considered. Some were particularly relevant because of the nature of the research objectives. Others were relevant for methodological reasons and applied equally to research and operational activities. The following criterion factors were considered:

- Variance in performance in the field situation
- Stability of the career ladder
- Heterogeneity of job types within career ladder
- Availability of high quality Job Inventory data
- Specificity of Job Inventory task statements
- Ease of translation of descriptive task statements into evaluative statements
- Availability of task criticality data
- Availability of supervisors and peers as qualified observers

\*Hahn, C.P. Development of Task Level Job Performance Criteria-Interim Report on Phase I. Washington, D.C. American Institutes for Research February 1973.



- Availability of objective measures of performance
- Number of tasks accounting for large portions of time spent by incumbents
- Range and mix of task difficulties within the career ladder
- Involvement of motivational as opposed to skill and ability factors
- Directed duty assignment versus formal school input
- Aptitude area input to the career field

The following group of 35 career ladders was examined as potential candidates.

<u>AFSC</u>	<u>Career Field</u>
252X1	Weather Observer
275X0	Aerospace Control Systems Operations
291X0	Communications Center Operations
293X0	Ground Radio Operations
301X0	Aircraft Radio Repairman
301X1	Aircraft Electronic Navigation Equipment Repairman
301X4	Aircraft Inertial and Radar Navigation Systems Repairman
303X2	AC & W Radar Repairman
304X0	Radio Relay Equipment Maintenance
304X4	Ground Radio Communications Equipment Maintenance
363X0	Communications and Relay Center Equipment Repairman (Electro/Mech)
421X2	Aircraft Pneudraulic Repair
421X3	Aerospace Ground Equipment Repair
423X0	Aircraft Electrical Repairman
431X1	Aircraft Maintenance
432X0	Jet Engine Mechanic
461X0	Munitions and Weapons Maintenance
462X0	Munitions and Weapons Maintenance
473X0	Vehicle Maintenance
534X0	Airframe Repair
543X0	Electrical Power Production
551X0	Civil Engineering
551X1	Civil Engineering
571X0	Fire Protection
605X0	Air Transportation/Air Passenger and Air Freight Ladders
605X1	Air Transportation/Air Passenger and Air Frieght Ladders

AFSCCareer Field

631X0	Fuel Services
645X0	Inventory Management
647X0	Materiel Facilities
685X0	Data Systems
702X0	Administrative
732X0	Personnel
811X0	Security Police
902X0	Medical Services
906X0	Medical Administrative

Four of these were eliminated on the basis of planned major changes in the career ladder structure. Available data on the remaining ladders were carefully examined and a series of interviews with experienced incumbents were conducted. Results from these activities were submitted to the monitoring agency along with recommendations for the three career ladders to be studied. The following three career ladders were mutually agreed upon.

- Communication Center Operations - AFSC 291X0
- Ground Radio Communication Equipment Maintenance - AFSC 304X4
- Aircraft Maintenance (Jet) - AFSC 431X1-C

Development of Performance Measurement Instruments and Procedures

A major task in developing the criterion instruments and procedures sought for field use involved translating the descriptive task statements of the USAF Job Inventories into evaluative statements that could form the basis for scaling how well the tasks were done. Throughout the entire development process, contractor staff members who were experienced in the techniques of performance evaluation and scaling had the active support of a group of experienced incumbents from the career ladders being studied. This was accomplished through an iterative series of working sessions first with groups of 2-3 incumbents per ladder, then groups of 10, and finally groups of approximately 50 incumbents for each career ladder.

The Job Inventory task lists were reviewed and appropriate additions, deletions, and revisions were made in order to update the task lists. Data from iterative sorts of discernible levels of performance; degree of observability and measurability; criticality; range of difficulty; and



stability of performance were used to develop an initial list of candidate tasks for further development. Career ladder incumbents then developed an initial set of behavioral descriptors for either total task performance or for critical dimensions of performance for the tasks on the candidate list.

A series of one-week work sessions with groups of 10 experienced incumbents were conducted to review and revise the descriptors previously developed, to develop additional descriptors for relevant tasks, and to devise initial scaling procedures for use with the descriptors. These same groups rated the importance of each task dimension for inclusion in the field survey forms. The data from these sessions were used by the contractor staff in preparing forms for use in simulated rating sessions by larger groups of NCO's from each career ladder.

A series of week-long career ladder workshops was held, each involving approximately 50 senior NCO's from the career fields being studied. The purposes of these workshops were to use previously developed instruments in a simulated rating situation, to develop additional scales, to develop ancillary instruments for field use in conjunction with the performance rating instruments, and to elicit opinions about procedures to be used to collect the field data.

Results from the career ladder workshops indicated that the forms developed appeared capable of capturing some of the performance variance that existed in the field. Six overall job performance ratings were generated in addition to the ratings at the task level, as were judgments of importance for inclusion of the surviving tasks in the final field format. Data from the workshops were utilized to make final revisions in the field forms for collecting performance data and these were later reviewed by workshop participants on a mail-out basis.

Several additional forms were developed and tried out in the career ladder workshops. These forms were to be utilized in connection with the performance data survey to satisfy other concerns of interest to the monitoring agency. One of these was a Work Factor Requirements Rating Form. The work factors concerned were those which applied to the job itself and not to the airmen performing the job nor the manner in which it was performed. These were the types of factors that are typically

considered during job evaluation procedures designed to establish an appropriate grade and pay level. It was anticipated that such factors would eventually be compared with performance data. A ten factor form with a nine-point scale for rating each factor was developed for field use.

In order to understand better some of the factors which contribute to task performance, instruments and procedures were also developed to collect data regarding the acquisition and retention of the skills and knowledge associated with the various tasks. The form developed called for judgments of the major source of skill acquisition in terms of technical training school, formal OJT program, or job experience. Separate ratings were requested for the acquisition of job knowledge and job proficiency following the model of the Air Force dual channel OJT concept. Judgments were also requested concerning the relative perishability of task knowledge and proficiency after an acceptable level had once been attained.

Tentative forms were also developed for judging the interest value and judged complexity of the various tasks. These ratings tended to be highly intercorrelated and their relationship to overall performance was somewhat unstable across the three career ladders. Data regarding these task characteristics was therefore not sought from the field.

Tentative forms were also developed for obtaining task preference ratings on the premise that individual preferences for certain tasks or groups of tasks might affect the motivation level and thus influence task performance. For tasks selected as most and least preferable, judgments of the relative potency of generalized motivational factors were requested. The data from these activities were used to prepare a motivation rating form to be completed by incumbents. This form allowed for expressions of both the importance of the motivational factors and the direction of their influence, i.e., positive, negative, or both.

#### Data Sources

As a result of the developmental activities described, the following set of survey instruments was utilized for collecting data for 5 skill incumbents from the three career ladders:

- Performance and Skills/Abilities Versus Motivation Ratings

This rating instrument was designed for use by both supervisors and peers to provide data on the level of task dimension performance and on the relative importance of skills and abilities as opposed to motivational factors in contributing to the level of performance.

- Performance Ratings

This rating instrument was designed for use by incumbents to provide data concerning their own perceived level of task dimension performance.

- Motivation Ratings

This rating instrument was designed for use by incumbents to provide data regarding both the intensity and direction of effect of a set of generalized motivational factors.

- Training and Skill Retention Ratings

This rating instrument was designed for use by incumbents as well as by supervisors and peers to provide data regarding the primary source for acquisition of task knowledge and task proficiency as well as the relative perishability of such knowledge and proficiency after an acceptable level had once been attained.

- Work Requirement Factor Ratings

This rating instrument was designed for use by incumbents, supervisors, and peers to provide data on ten generalized requirement factors associated with the duty positions within the career ladder themselves rather than with incumbents or their level of performance.

- United States Air Force Job Inventory

Copies of the current job inventory were reproduced and used by incumbents for indicating which tasks they performed and the relative amount of time spent on each.

A copy of the survey forms used may be found in Appendix A, *which has*

In addition to the data derived from field administration of the above survey documents, data concerning incumbents were also abstracted from existing Air Force computer personnel records. These data included AFQT score, four Aptitude Index scores, sex, date of enlistment, and educational level at time of enlistment. A reference battery of classification instruments was also administered to a sample of the incumbents for whom survey

*been deposited with*



data were collected. The reference battery consisted of reprints of the following previously used Air Force instruments

- Biographical Inventory - BE601B(Rev)
- Decoding Test - BI214AX2
- Memory for Landmarks - BI501B(Rev)
- Complex Scale Reading Test - BE454A
- Least Preferred Co-worker Scale - BE560AX
- Pursuit Test - BP414A
- Figure Analogies - BI212BX
- Hands Test - BP512A
- Cubes Test - BP512A
- Vocational and Occupational Interest Choice Examination - BE520AX
- Practical Estimations - BI308AX1
- Mechanical Principles - BI903A
- Following Directions Test - Form A
- Job Satisfaction Information - BE540AX
- Spatial Reasoning - BI211BX2

#### Field Survey Activities

Initial administration of the full set of field survey forms was carried out by mail in the Fall of 1972. To facilitate the administration of the survey forms, each major command was requested to appoint enlisted coordinators from the career fields being studied at bases around the world. The original intention was that many of these coordinators would be drawn from among previous participants in the career ladder workshops so that they would be thoroughly familiar with the study. More often than not this was not the case so that the orientation materials sent with the survey instruments had to be depended upon. The orientation materials included a written form for use with incumbents and peers, a written form for use with supervisors, and an audio tape presentation for use with all participants. In addition to this, training material in the form of "Tips About Observing and Rating Job Performance" was included in both written and audio tape form for use with all participants who were asked to rate the performance of another airman.

Sample selection was made from then-current UAR printouts of 5 skill level incumbents at bases throughout the world. An initial target of 2,000 incumbents from each career was sought. For the 304X4 field the total population fell short of this number so that coordinators were instructed to obtain data on all 5 skill level incumbents available at their base. Forms for obtaining data on approximately 1,400 incumbents from this career ladder were sent to the field. For each identified incumbent, attempts were made to get self-ratings and ratings from a first-level supervisor and two peers. Substitution of supervisors for peers and vice versa was allowed when necessary in an attempt to collect these ratings for as many incumbents as possible.

For the 291X0 career ladder, the UAR printouts showed only a few more than the target 2,000 incumbents so that coordinators were requested to use all airmen named and to get replacement incumbents for those who were no longer at the base. For the 431X1-C career ladder where there was an adequate number of incumbents, the sample was chosen so as to spread the field data collection load as evenly as possible across major commands within the constraints imposed by the availability of coordinators.

The return rate for this initial administration of field survey forms was less than desirable. Large scale and repeated follow-up efforts both by mail and telephone within the U.S. were made in order to maximize the number of returns. Complete sets of ratings including self-ratings and three supervisor and/or peer ratings were received for only a small portion of the 5,400 incumbents included in the initial sample. Some usable survey materials were received for 1,034 incumbents from AFSC 291X0; 608 incumbents from AFSC 304X4; and 1,074 incumbents from AFSC 431X1-C.

In retrospect, it is clear that the decision to attempt to administer the survey materials through the use of enlisted coordinators who had no real authority to command compliance was a poor one. The option of individual return by the respondent directly to the contractor in preaddressed and franked envelopes, which the bulk of respondents chose to use, further complicated control problems at the base level. All field data collection activities after the first administration were channeled through the Survey Control Office at the bases involved. This generally proved to be a more effective procedure.



In order to bolster the size of the sample for which performance data were available, the monitoring agency conducted a supplemental survey. Survey materials included in this supplemental survey included Performance Ratings, Motivation Ratings, Performance and Skills/Abilities Versus Motivation Ratings, and Training and Skill Retention Ratings. Ratings were requested from incumbents and one supervisor, ~~or peer~~<sup>the peer</sup>. This supplemental survey was conducted in ~~late Summer~~<sup>the fall</sup> 1973. Materials were targeted to 990 incumbents from AFSC 291X0; 740 incumbents from AFSC 304X4; and 990 incumbents from AFSC 431X1-C. Usable returns were received for 558 incumbents from AFSC 291X0; 422 incumbents from AFSC 304X4; and 564 incumbents from AFSC 431X1-C.

In the ~~Fall~~<sup>Winter</sup> of 1973 a second administration of the Performance and Skills/Abilities Versus Motivation Ratings instrument was carried out. Ratings were requested from two supervisors of all original incumbents in the initial sample who could be located. This included 639 incumbents from AFSC 291X0; 467 incumbents from AFSC 304X4; and 730 incumbents from AFSC 431X1-C. Some usable returns were received for 440 incumbents in AFSC 291X0; 304 incumbents in AFSC 304X4; and 422 incumbents in AFSC 431X1-C.

As a result of these field survey activities, some usable data were collected for a total of 4,260 incumbents including 1,592 from AFSC 291X0, 1,030 from AFSC 304X4; and 1,638 from AFSC 431X1-C.

### III. ANALYSES

#### Introduction

It was recognized from the outset that the project would generate more data than could be analyzed by the contractor within the scope of the contractual effort. In order to make the total data bank available to the monitoring agency for future analyses, the contractor transcribed all data on to a set of magnetic tapes. These tapes include a 12,222 positional record for each of 4,260 incumbents in the three fields combined. Copies of the positional fields and the location on the basic tape records of all individual data items were transmitted to the monitoring agency.

Of these total incumbents, 2,716 of them were included in the original contractor sample for which ratings were requested from the incumbent and three other raters, either peers or supervisors. The monitoring agency supplemental sample included 1,544 incumbents for which ratings were requested from the incumbent and one supervisor. Of the original sample of 2,716 incumbents, results from a second administration of the performance and motivation booklets requested from two supervisors each were included for 1,166 incumbents.

Most incumbent cases did not include a full set of returned material. The number of cases per source document included in the total data bank are shown below.

USAF Job Inventory	2323
Incumbent Performance Ratings	3628
Incumbent Motivation Ratings	3249
Incumbent Training and Skill Retention Ratings	3403
First Peer Training and Skill Retention Ratings	1738
Second Peer Training and Skill Retention Ratings	1057
Third Peer Training and Skill Retention Ratings	79
First Supervisor Training and Skill Retention Ratings	2918
Second Supervisor Training and Skill Retention Ratings	361
Third Supervisor Training and Skill Retention Ratings	29
Fourth Supervisor Training and Skill Retention Ratings	1
Incumbent Work Requirement Factor Ratings	2080
First Peer Work Requirement Factor Ratings	1526
Second Peer Work Requirement Factor Ratings	919
Third Peer Work Requirement Factor Ratings	43
First Supervisor Work Requirement Factor Ratings	2049
Second Supervisor Work Requirement Factor Ratings	341
Third Supervisor Work Requirement Factor Ratings	29
Fourth Supervisor Work Requirement Factor Ratings	1

First Peer Performance & Skills/ability vs. Motivation Ratings	1816
Second Peer Performance & Skills/ability vs. Motivation Ratings	1115
Third Peer Performance & Skills/ability vs. Motivation Ratings	51
First Sup. Performance & Skills/ability vs. Motivation Ratings	2253
Second Sup. Performance & Skills/ability vs. Motivation Ratings	391
Third Sup. Performance & Skills/ability vs. Motivation Ratings	28
First Peer General Performance Ratings	1832
Second Peer General Performance Ratings	1126
Third Peer General Performance Ratings	52
First Supervisor General Performance Ratings	2546
Second Supervisor General Performance Ratings	396
Third Supervisor General Performance Ratings	28
Air Force Computer Personnel Records	3760
Decoding Test	2236
Memory for Landmarks	2113
Complex Scale-Reading Test	2166
Pursuit Test	2213
Figure Analogies Test	2208
Hands Test	2210
Cubes Test	2211
Mechanical Principles Test	2194
Following Directions Test	2195
Practical Estimations	2195
Least Preferred Coworker	2189
Job Satisfaction Information	2189
Spatial Reasoning Test	2188
Biographical Inventory	2186
Vocational and Occupational Interest Choice Exam	2173
Second Administration of Performance and Skills/ability vs. Motivation Ratings - First Supervisor	871
Second Administration of Performance and Skills/ability vs. Motivation Ratings - Second Supervisor	295

Throughout the analyses which are described below, the number of cases available for any specific task dimension varied widely. The number of cases per source document indicated above include those documents for which information may have been available for a half-dozen or less task dimensions of the 51 to 92 dimensions potentially available for any particular AFSC. The type of attrition of data experienced at the individual task level in the three illustrative career fields can be expected whenever the "jobs" studied are as heterogeneous as those normally included in a typical Air Force career field, even when the scope is limited to a specific skill level which in this case was the middle level 5.

In analyzing the gross distributional characteristics of the obtained data, all available cases were utilized. For correlational analyses, the number of cases available were obviously restricted to those for which pairs



or triads (in the case of composite ratings) were available. The attrition in data at the individual task level for such analyses was even greater as review of the correlational data reveals. This problem is also inherent with the task level approach. Unless huge initial samples are originally available, it can be expected that detailed analyses of many of the tasks involved will not be possible due to the limited number of cases that will be available for any given task.

Distributional analyses were run for most of the primary data sources included in the study. Comprehensive computer print outs of these data were transmitted to the sponsoring agency. Detailed analyses of much of these data are not included in this report. The analyses reported below are mainly concerned with ratings from the first field administration of task level performance and supervisor/peer ratings of the degree to which the reported performance levels were skill and ability mediated as opposed to motivationally mediated.

Prior to running most of the analyses on the data concerning the original contractor sample, a preliminary screening process was utilized. For this sample, ratings had been requested from as many as three peers or supervisors per incumbent. A search was made of all peer and supervisor Performance and Skills and Abilities Versus Motivation Rating booklets in order to determine which peer or supervisor had responded to the most ~~number of~~ tasks for each incumbent. A working tape was then generated which included in addition to the incumbents data, the data for the one peer and one supervisor who had responded to the most tasks. Data from source documents other than the Performance and Skills and Abilities Versus Motivation Rating booklet for the identified peers and supervisors were included in this tape. An inspectional analysis of the computer print outs indicated that the data from the non-selected peer/supervisor sample had essentially the same distributional characteristics as the selected sample. Since only one rating per incumbent had been requested for the supplemental sample, this pre-screening process was not necessary. Composite supervisor/peer ratings were, of course, only available on the original sample and these composites were based on the one supervisor and one peer ratings selected as described above.

### Distributive Characteristics of Task Level Performance Ratings

Means and Standard Deviations: The means and standard deviations for task dimension performance ratings from incumbents from the three career fields are shown in ~~Figures~~<sup>Tables</sup> 1, 2, and 3. The means and standard deviations for task dimension performance ratings from supervisors and peers are shown in ~~Figures~~<sup>Tables</sup> 4, 5, and 6. The means and standard deviations for task dimension performance ratings for peer/supervisor composites from the original contractor sample are shown in ~~Figures~~<sup>Tables</sup> 7, 8, and 9. A summary of the relationships between mean performance ratings for incumbent, supervisor and peer ratings is shown in ~~Figure~~<sup>Table</sup> 10.

The range of mean task performance ratings was highest for AFSC 431X1-C, next highest for AFSC 291X0, and lowest for AFSC 304X4. In two of the three AFSC's, the range of incumbent ratings was larger than that of supervisor and peer ratings. For AFSC 304X4, the range of peer mean ratings was slightly higher than the range for incumbents. For three AFSC's, the incumbents' range of mean task ratings had both lower bottom and lower top ratings. In terms of the percent of tasks within a given AFSC for which supervisors or peers had the highest mean ratings, there were some differences between the career ladders as shown in ~~Figure~~<sup>Table</sup> 10. For AFSC 291X0 the split was almost even between supervisors and peers. For AFSC 304X4, peer ratings were higher than supervisor ratings on an approximately 5/4 ratio. The reverse was true, however, for AFSC 431X1-C in which supervisor ratings were higher than peer ratings on an approximately 3/4 ratio. In no case, was the mean incumbent task performance rating higher than both the supervisor and peer mean rating.

A summary of the relationships between the standard deviations of performance ratings for incumbent, supervisor and peer ratings is shown in ~~Figure~~<sup>Table</sup> 11. The range in standard deviations was highest for AFSC 291X0, next highest for AFSC 431X1-C, and lowest for AFSC 304X4. For the majority of tasks in all three AFSC's the standard deviation of incumbent ratings were higher than those for supervisor and peer ratings.

Skewness: All of the performance ratings for all three career fields from all three sources, i.e., incumbent, supervisor, and peer were negatively skewed with a pile up of ratings in the two highest rating categories. The degree of skewness varied somewhat between career fields and incumbent, peer, and supervisor ratings.



Table  
Figure 1  
Distribution of Task Dimension Ratings  
From Incumbents For AFSC 291X0

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
1	1066	6.234	1.172
2	835	5.519	1.369
3	800	5.844	1.261
4	977	5.258	1.647
5	708	5.129	1.637
6	608	5.409	1.477
7	924	5.818	1.269
8	1002	6.169	1.277
9	1029	6.209	1.085
10	984	5.841	1.333
11	958	5.696	1.293
12	945	5.820	1.246
13	1090	6.209	.984
14	958	6.097	1.226
15	1056	6.009	1.169
16	1003	6.216	1.058
17	892	5.885	1.345
18	830	5.946	1.200
19	970	6.045	1.119
20	1002	6.064	1.192
21	950	6.187	1.137
22	886	6.007	1.289
23	812	5.964	1.398
24	831	5.869	1.285
25	817	6.102	1.319
26	1041	6.160	1.220
27	1036	5.982	1.192
28	833	5.992	1.189
29	758	5.923	1.264
30	835	6.147	1.148
31	626	6.075	1.267
32	608	5.985	1.301
33	619	6.015	1.404

Table  
Figure 1  
Distribution of Task Dimension Ratings  
From Incumbents for AFSC 291X0  
Cont'd

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
34	591	5.897	1.482
35	469	5.597	1.648
36	388	5.531	1.683
37	556	5.851	1.555
38	519	5.736	1.590
39	561	5.595	1.688
40	785	5.973	1.396
41	765	5.899	1.388
42	797	5.851	1.447
43	714	5.688	1.485
44	724	5.932	1.421
45	778	5.826	1.502
46	858	6.430	1.061
47	895	6.077	1.323
48	778	5.959	1.271
49	935	6.096	1.224
50	843	5.967	1.100
51	954	6.439	1.045

Table  
Figure 2  
Distribution of Task Dimension Ratings  
From Incumbents For AFSC 304X4

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
1	473	5.006	1.312
2	288	5.191	1.342
3	418	5.022	1.307
4	277	5.058	1.387
5	453	5.561	1.328
6	407	5.437	1.236
7	319	5.520	1.160
8	351	5.373	1.147
9	348	5.468	1.230
10	303	5.706	1.117
11	311	5.740	1.194
12	191	5.419	1.278
13	210	5.457	1.352
14	189	5.333	1.440
15	203	5.291	1.289
16	268	5.526	1.207
17	246	5.443	1.272
18	242	5.331	1.323
19	375	5.432	1.269
20	357	5.123	1.286
21	475	5.686	1.186
22	380	5.639	1.272
23	122	5.443	1.355
24	77	5.506	1.334
25	296	5.524	1.294
26	297	5.690	1.188
27	252	5.639	1.263
28	398	5.688	1.139
29	368	5.489	1.155
30	382	5.688	1.127
31	128	5.625	1.217
32	138	5.572	1.272
33	329	5.520	1.259



Table  
Figure 2  
Distribution of Task Dimensions Ratings  
From Incumbents for AFSC 304X4  
Cont'd

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
34	326	5.632	1.171
35	255	5.494	1.295
36	363	5.419	1.178
37	426	5.369	1.236
38	296	5.764	1.175
39	127	5.606	1.255
40	117	5.496	1.324
41	232	5.547	1.318
42	314	5.691	1.112
43	372	5.500	1.169
44	266	5.169	1.367
45	92	5.054	1.440
46	132	5.220	1.383
47	350	5.451	1.283
48	294	5.279	1.318
49	374	5.332	1.128
50	331	5.622	1.038
51	304	5.444	1.301
52	144	5.396	1.360
53	120	5.383	1.258
54	327	5.480	1.228
55	308	5.370	1.263
56	358	5.383	1.088
57	411	5.394	1.173
58	341	5.276	1.317
59	257	5.549	1.352
60	287	5.725	1.205
61	305	5.472	1.209
62	166	5.127	1.371
63	251	5.438	1.239
64	283	5.406	1.092

Table  
Figure 2  
Distribution of Task Dimensions Ratings  
From Incumbents for AFSC 304X4  
Cont'd

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
65	337	5.772	1.101
66	290	5.790	1.072
67	411	5.596	1.092
68	347	5.772	1.071
69	353	5.487	1.234
70	414	5.505	1.235
71	418	5.589	1.116
72	352	5.764	1.111
73	338	5.678	1.235
74	92	5.163	1.401
75	82	5.146	1.450
76	80	5.375	1.316
77	329	5.696	1.179
78	268	5.586	1.204
79	236	5.436	1.268
80	322	5.531	1.114
81	411	5.698	1.078
82	377	5.605	1.158
83	255	5.612	1.151
84	129	5.341	1.482
85	285	5.418	1.150
86	236	5.597	1.280
87	130	5.285	1.485
88	295	5.481	1.139
89	350	5.566	1.102
90	312	5.551	1.136
91	217	5.336	1.501
92	390	5.408	1.297

Table  
Figure 3  
Distribution of Task Dimension Ratings  
From Incumbents For AFSC 431X1-C

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
1	1225	5.690	1.313
2	1233	5.559	1.266
3	1314	5.489	1.352
4	1038	5.028	1.547
5	1359	5.918	1.155
6	1234	5.442	1.379
7	1175	5.900	1.200
8	998	5.459	1.333
9	1012	5.387	1.593
10	1322	5.993	1.241
11	1334	5.810	1.130
12	1196	5.735	1.246
13	1237	4.958	1.413
14	812	5.723	1.393
15	821	6.315	1.247
16	801	5.712	1.368
17	780	5.841	1.239
18	857	5.569	1.241
19	1234	5.968	1.186
20	1178	5.030	1.566
21	1324	5.576	1.338
22	1275	6.014	1.240
23	871	6.022	1.363
24	834	6.171	1.264
25	1319	6.090	1.118
26	1239	5.986	1.120
27	1212	5.981	1.063
28	1232	6.123	1.043
29	1162	6.361	0.966
30	1225	6.274	1.084
31	1250	5.819	1.166
32	1068	5.743	1.161
33	1188	6.086	1.180



Table  
Figure 3  
Distribution of Task Dimension Ratings  
From Incumbents For AFSC 431X1 -C  
Cont'd

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
34	1223	6.148	1.094
35	1178	6.072	1.139
36	758	5.790	1.176
37	738	5.589	1.288
38	696	5.920	1.239
39	1222	6.144	1.209
40	1204	6.073	1.175
41	1194	6.106	1.157
42	1204	6.151	1.102
43	1037	5.600	1.198
44	1012	5.865	1.198
45	1011	6.061	1.107
46	1064	5.851	1.127
47	851	5.613	1.204
48	1201	5.779	1.059
49	695	6.006	1.477
50	1240	6.339	1.077
51	1208	6.241	1.238
52	1256	6.293	1.078
53	1038	6.143	1.160
54	1106	6.068	1.124
55	1224	6.195	1.251

Table  
Figure 4  
Distribution of Task Dimension  
Performance Ratings for AFSC 291X0

Task Dimension	Supervisor			Peer		
	N	Mean	$\sigma$	N	Mean	$\sigma$
1	639	6.39	.93	483	6.30	.97
2	398	5.74	1.29	337	5.82	1.33
3	387	5.88	1.35	333	5.94	1.33
4	675	5.65	1.59	466	5.71	1.60
5	280	5.75	1.32	257	5.76	1.47
6	292	5.93	1.20	258	5.95	1.22
7	602	6.10	1.05	440	6.00	1.24
8	561	6.39	.97	394	6.28	1.10
9	623	6.29	1.01	452	6.30	1.04
10	567	5.90	1.25	425	6.06	1.18
11	554	5.86	1.26	420	5.95	1.21
12	541	5.99	1.18	411	6.04	1.20
13	679	6.32	.97	491	6.36	1.00
14	561	6.48	.87	405	6.35	1.01
15	641	6.01	1.23	472	6.12	1.22
16	610	6.25	1.05	445	6.18	1.12
17	435	6.23	1.08	326	6.21	1.14
18	648	5.98	1.41	477	5.98	1.38
19	630	6.15	1.14	424	6.22	1.08
20	615	6.22	1.06	430	6.33	1.01
21	548	6.38	.97	391	6.35	1.00
22	534	6.29	1.08	375	6.29	1.10
23	441	6.44	1.09	336	6.52	.90
24	424	6.36	1.03	308	6.34	.98
25	511	6.40	.97	348	6.37	1.11
26	611	6.17	1.29	445	6.25	1.25
27	627	6.26	.98	430	6.26	1.09
28	471	6.19	1.07	343	6.17	1.11
29	453	6.16	1.05	326	6.22	1.04
30	480	6.53	.80	365	6.47	.87
31	219	6.47	.87	256	6.42	1.00
32	224	6.36	1.02	236	6.21	1.10
33	222	6.37	.89	191	6.16	1.23

Table  
Figure 4  
Distribution of Task Dimension  
Performance Ratings for AFSC 291X0  
Cont'd

Task Dimension	Supervisor			Peer		
	N	Mean	$\sigma$	N	Mean	$\sigma$
34	216	6.35	.89	183	6.19	1.19
35	119	6.16	1.18	113	6.01	1.27
36	149	6.12	1.12	132	6.30	1.09
37	198	6.38	.93	163	6.31	1.20
38	192	6.38	1.00	158	6.18	1.21
39	194	6.25	1.09	152	6.18	1.27
40	384	6.03	1.20	246	6.13	1.23
41	427	6.15	1.11	276	6.14	1.26
42	376	5.86	1.31	250	6.09	1.28
43	325	5.99	1.15	213	6.15	1.19
44	339	6.31	1.01	221	6.32	1.13
45	378	5.92	1.29	251	6.13	1.29
46	455	6.64	.79	312	6.63	.85
47	491	6.38	1.04	334	6.32	1.18
48	310	6.41	.90	204	6.41	.94
49	362	6.24	1.12	409	6.36	.99
50	533	6.14	1.07	382	6.25	1.06
51	560	6.62	.87	368	6.55	.99



Table  
Figure 5  
Distribution of Task Dimension  
Performance Ratings for AFSC 304X4

Task Dimension	Supervisor			Peer		
	N	Mean	$\sigma$	N	Mean	$\sigma$
1	254	5.47	1.15	227	5.25	1.29
2	257	5.54	1.28	226	5.35	1.46
3	369	5.42	1.28	329	5.44	1.19
4	196	5.42	1.28	164	5.47	1.34
5	408	5.80	1.19	359	5.86	1.13
6	396	5.57	1.22	353	5.74	1.17
7	380	5.68	1.14	342	5.60	1.28
8	239	5.83	1.07	264	5.83	1.02
9	235	5.66	1.17	258	5.81	1.12
10	232	5.76	1.13	251	5.88	1.12
11	210	5.75	1.25	232	5.75	1.20
12	114	6.00	1.12	115	5.91	1.08
13	103	6.00	1.04	117	5.84	1.11
14	75	5.88	1.13	78	6.03	.95
15	136	5.93	1.06	186	5.83	1.10
16	190	5.81	1.09	180	5.52	1.26
17	211	5.93	.95	185	5.84	1.10
18	183	5.71	1.08	154	5.86	1.09
19	259	5.77	1.11	284	5.68	1.10
20	252	5.51	1.24	285	5.58	1.25
21	398	5.87	1.20	366	5.83	1.21
22	317	5.82	1.14	297	5.83	1.30
23	45	5.96	1.19	65	5.71	1.38
24	57	5.70	1.10	61	5.79	1.16
25	232	5.88	1.18	207	5.83	1.22
26	245	5.93	1.08	209	5.94	1.09
27	227	5.76	1.11	180	5.93	1.14
28	342	5.83	1.17	337	5.78	1.21
29	391	5.70	1.13	358	5.71	1.13
30	318	5.85	1.04	302	5.82	1.13
31	54	6.07	1.04	66	5.86	1.11
32	55	5.76	1.19	61	5.92	1.00
33	257	5.82	1.12	216	5.78	1.09

Table  
~~Figure 5~~  
 Distribution of Task Dimension  
 Performance Ratings for AFSC 304X4  
 Cont'd

Task Dimension	Supervisor			Peer		
	N	Mean	$\sigma$	N	Mean	$\sigma$
34	260	5.96	.93	226	5.94	1.00
35	240	5.80	1.07	193	5.91	1.08
36	351	5.77	1.02	334	5.73	1.10
37	340	5.76	1.02	307	5.70	1.19
38	274	5.91	1.06	283	6.01	1.07
39	45	6.16	1.07	58	5.90	1.19
40	43	5.81	1.14	51	5.92	1.04
41	188	5.79	1.13	167	5.92	1.02
42	309	5.84	.99	311	5.87	1.04
43	306	5.67	1.08	289	5.72	1.16
44	232	5.63	1.25	202	5.53	1.23
45	49	5.98	1.07	55	5.76	1.15
46	48	5.44	1.20	55	5.80	1.11
47	237	5.82	1.00	209	5.82	1.07
48	221	5.62	1.13	173	5.76	1.04
49	338	5.73	1.00	330	5.69	1.10
50	276	5.76	1.05	285	5.88	1.13
51	206	5.75	1.15	197	5.68	1.25
52	41	5.98	1.17	56	5.91	1.23
53	45	5.49	1.22	54	5.93	1.04
54	226	5.79	1.05	198	5.89	1.03
55	204	5.58	1.11	166	5.86	1.11
56	336	5.75	1.02	320	5.83	1.09
57	400	5.62	1.17	383	5.60	1.20
58	370	5.62	1.22	362	5.57	1.27
59	209	5.84	1.16	196	5.87	1.16
60	225	6.05	1.00	209	6.09	.97
61	298	5.85	1.02	298	5.85	1.08
62	102	5.59	1.28	104	5.66	1.15
63	225	5.64	1.15	197	5.81	1.13
64	322	5.73	1.00	292	5.74	1.04
65	329	6.01	.99	304	5.91	1.04
66	321	5.93	1.04	301	5.93	1.11

Table  
Figure 5  
Distribution of Task Dimension  
Performance Ratings for AFSC 304X4  
Cont'd

Task Dimension	Supervisor			Peer		
	N	Mean	$\sigma$	N	Mean	$\sigma$
67	381	5.75	1.10	357	5.89	1.11
68	369	5.88	1.05	332	5.93	1.05
69	272	5.83	1.05	257	5.81	1.21
70	374	5.83	1.13	361	5.82	1.21
71	389	5.77	1.13	359	5.83	1.16
72	381	5.93	1.03	340	5.94	1.12
73	260	5.80	1.13	265	5.89	1.11
74	73	5.66	1.26	80	5.70	1.25
75	41	5.98	1.21	53	5.94	1.17
76	41	5.46	1.19	49	5.92	.98
77	298	5.93	1.02	260	5.87	1.01
78	200	5.94	1.01	173	5.88	1.00
79	179	5.65	1.24	151	5.89	1.02
80	312	5.79	1.00	291	5.81	1.10
81	394	5.79	1.09	364	5.83	1.09
82	381	5.71	1.16	346	5.66	1.30
83	200	5.69	1.14	191	5.83	1.12
84	79	5.82	1.13	73	5.82	1.15
85	301	5.79	1.02	298	5.85	1.09
86	188	5.68	1.18	174	5.89	1.13
87	73	5.92	1.08	73	5.86	1.11
88	295	5.76	1.01	287	5.81	1.10
89	330	5.69	1.12	319	5.78	1.12
90	324	5.74	1.12	311	5.76	1.13
91	138	5.67	1.17	154	5.76	1.07
92	431	5.65	1.35	380	5.57	1.40



Table  
Figure 6  
Distribution of Task Dimension  
Performance Ratings for AFSC 431X1-C

Task Dimension	Supervisor			Peer		
	N	Mean	$\sigma$	N	Mean	$\sigma$
1	755	5.92	1.12	532	5.96	1.12
2	762	5.67	1.34	559	5.79	1.26
3	828	5.78	1.28	573	5.79	1.22
4	426	5.58	1.33	296	5.80	1.24
5	818	5.88	1.25	608	6.01	1.15
6	612	5.94	1.24	516	5.71	1.30
7	614	6.08	1.16	521	5.94	1.18
8	535	6.01	1.00	399	5.85	1.15
9	452	6.24	1.16	339	5.80	1.50
10	786	6.32	1.00	592	6.23	1.03
11	765	6.05	1.06	602	6.03	1.07
12	626	6.11	1.05	440	6.01	1.08
13	570	5.54	1.30	441	5.68	1.22
14	338	6.19	1.07	318	6.14	1.06
15	319	6.58	.78	304	6.38	.99
16	304	6.02	1.25	277	6.04	1.15
17	289	5.98	1.27	276	6.08	1.13
18	533	5.99	1.06	393	6.03	1.07
19	697	6.10	1.22	540	5.99	1.26
20	722	5.54	1.41	520	5.63	1.39
21	805	5.82	1.32	589	5.83	1.24
22	788	6.25	1.09	604	6.19	1.09
23	351	6.38	1.07	301	6.22	1.19
24	341	6.44	.97	295	6.30	1.04
25	771	6.18	1.09	615	6.19	1.09
26	761	6.13	1.17	606	6.10	1.14
27	746	6.15	1.12	599	6.08	1.12
28	608	6.22	.97	500	6.16	1.07
29	597	6.37	.91	494	6.26	1.03
30	664	6.51	.88	527	6.38	.98
31	666	6.05	1.08	498	6.09	1.02
32	468	6.00	1.03	377	6.00	1.08
33	564	6.27	1.07	447	6.15	1.17

Table  
Figure 6  
Distribution of Task Dimension  
Performance Ratings for AFSC 431X1 -C

Task Dimension	Supervisor			Peer		
	N	Mean	$\sigma$	N	Mean	$\sigma$
	679	6.30	.95	506	6.16	1.04
34	659	6.20	1.06	490	6.13	1.11
35	334	6.06	.97	290	5.93	1.09
36	162	6.06	1.04	171	5.88	1.22
37	169	6.15	1.07	172	5.91	1.30
38	649	6.33	.95	485	6.18	1.08
39	671	6.32	.98	517	6.18	1.09
40	659	6.23	1.19	508	6.17	1.12
41	666	6.27	1.09	509	6.23	1.08
42	435	5.86	1.11	368	5.89	1.12
43	428	6.02	1.07	362	5.96	1.19
44	433	6.20	1.04	362	6.18	1.03
45	507	6.03	1.06	402	5.97	1.10
46	292	6.00	1.06	259	5.91	1.22
47	708	6.14	.98	509	6.03	1.10
48	144	6.55	.87	185	6.10	1.24
49	703	6.59	.81	537	6.36	.97
50	653	6.55	.89	516	6.31	1.07
51	715	6.39	.93	557	6.31	1.06
52	411	6.31	1.02	410	6.18	1.08
53	680	6.32	.95	514	6.24	1.00
54	660	6.46	.90	496	6.27	1.07
55						

Table  
Figure 7  
Distribution of Task Dimension Ratings  
from Peer/Supervisor Composite for AFSC 291X0

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
1	389	12.75	1.45
2	173	11.67	2.06
3	163	11.94	2.12
4	358	11.43	2.29
5	105	11.57	2.16
6	108	12.05	1.94
7	293	12.20	1.73
8	305	12.77	1.49
9	373	12.65	1.54
10	335	12.01	1.89
11	324	11.86	1.94
12	311	12.07	1.95
13	394	12.74	1.49
14	314	12.89	1.31
15	400	12.12	1.98
16	353	12.45	1.69
17	201	12.63	1.61
18	402	12.03	2.08
19	343	12.46	1.65
20	361	12.66	1.45
21	309	12.78	1.41
22	278	12.63	1.63
23	234	12.97	1.53
24	202	12.73	1.48
25	255	12.75	1.53
26	354	12.38	1.95
27	322	12.54	1.58
28	243	12.45	1.68
29	220	12.41	1.67
30	245	12.99	1.28
31	89	12.90	1.33
32	78	12.55	1.68
33	125	12.64	1.54



~~Table~~  
~~Figure 7~~  
 Distribution of Task Dimension Ratings  
 from Peer/Supervisor Composite for AFSC 291X0  
 Cont'd

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
34	121	12.58	1.53
35	45	11.87	1.87
36	64	12.31	1.67
37	102	12.74	1.43
38	95	12.64	1.45
39	88	12.41	1.84
40	179	12.30	1.74
41	190	12.43	1.69
42	178	12.08	1.91
43	129	12.20	1.80
44	145	12.75	1.49
45	180	12.21	1.88
46	196	13.29	1.08
47	250	12.72	1.63
48	83	12.82	1.42
49	282	12.62	1.58
50	256	12.51	1.57
51	257	13.18	1.30

Table  
Figure 8  
Distribution of Task Dimension Ratings  
From Peer/Supervisor Composite For AFSC 304X4

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
1	117	10.92	2.01
2	113	11.07	2.23
3	227	10.95	2.16
4	76	11.50	1.86
5	275	11.67	1.83
6	261	11.38	1.86
7	243	11.35	1.90
8	124	11.57	1.55
9	125	11.24	1.89
10	124	11.45	1.85
11	102	11.54	2.09
12	43	11.56	2.15
13	35	11.66	1.95
14	21	11.43	2.09
15	45	11.60	2.00
16	83	11.16	2.15
17	103	11.61	1.80
18	91	11.49	1.70
19	140	11.43	1.85
20	142	10.95	2.14
21	275	11.62	1.98
22	206	11.51	2.01
23	14	12.21	2.29
24	15	11.40	2.26
25	115	11.51	2.16
26	130	11.77	1.83
27	121	11.79	1.73
28	229	11.62	1.93
29	264	11.47	1.74
30	207	11.62	1.67
31	20	12.10	2.13
32	14	11.00	2.29
33	127	11.54	1.92

Table  
Figure 8  
Distribution of Task Dimension Ratings  
From Peer/Supervisor Composite For AFSC 304X4  
Cont'd

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
34	147	11.82	1.56
35	136	11.82	1.56
36	225	11.60	1.63
37	186	11.39	1.77
38	171	11.70	1.89
39	15	11.87	2.53
40	12	11.08	2.47
41	107	11.79	1.50
42	187	11.74	1.66
43	196	11.28	1.88
44	110	11.00	2.03
45	17	11.82	2.43
46	14	10.64	2.31
47	138	11.54	1.78
48	122	11.29	1.80
49	224	11.48	1.72
50	187	11.51	1.88
51	103	11.35	2.06
52	13	11.77	2.68
53	12	10.92	2.31
54	133	11.59	1.75
55	121	11.46	1.79
56	221	11.66	1.65
57	287	11.11	2.05
58	256	11.15	2.11
59	106	11.58	2.10
60	137	12.09	1.57
61	188	11.82	1.57
62	60	11.45	2.26
63	139	11.58	1.85
64	195	11.60	1.64
65	202	12.01	1.62
66	197	11.96	1.78



Table  
Figure 8  
Distribution of Task Dimension Ratings  
From Peer/Supervisor Composite For AFSC 304X4  
Cont'd

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
67	265	11.69	1.72
68	242	11.82	1.75
69	135	11.61	1.81
70	271	11.66	1.87
71	268	11.65	1.90
72	250	11.91	1.81
73	167	11.69	1.84
74	33	10.85	2.37
75	16	11.63	2.31
76	10	10.60	2.59
77	170	11.79	1.65
78	112	11.91	1.68
79	101	11.57	1.81
80	194	11.68	1.73
81	279	11.60	1.79
82	261	11.44	2.07
83	113	11.54	1.77
84	37	11.86	2.25
85	178	11.76	1.68
86	108	11.72	1.87
87	39	12.08	1.94
88	175	11.64	1.82
89	215	11.58	1.88
90	209	11.57	1.84
91	46	11.09	1.93
92	285	11.14	2.20

Table  
Figure 9  
Distribution of Task Dimension Ratings  
From Peer/Supervisor Composite For AFSC 431X1-C

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
1	414	12.01	1.64
2	447	11.54	1.93
3	487	11.59	1.93
4	172	11.55	2.07
5	521	11.87	1.82
6	364	11.66	1.98
7	362	11.98	1.84
8	263	11.88	1.65
9	185	12.30	1.93
10	485	12.60	1.48
11	486	12.05	1.59
12	317	12.24	1.55
13	261	11.36	1.77
14	220	12.41	1.60
15	199	13.08	1.18
16	136	12.07	1.84
17	123	12.07	1.94
18	239	12.18	1.51
19	442	12.12	1.99
20	395	11.30	2.09
21	491	11.68	2.01
22	503	12.47	1.66
23	215	12.67	1.60
24	203	12.81	1.48
25	516	12.37	1.75
26	502	12.24	1.80
27	489	12.24	1.76
28	356	12.45	1.49
29	350	12.69	1.41
30	431	12.94	1.47
31	353	12.25	1.53
32	225	12.08	1.68
33	293	12.42	1.68

Table  
Figure 9  
Distribution of Task Dimension Ratings  
From Peer/Supervisor Composite For AFSC 431X1 -C  
Cont'd

Task Dimension	Performance Ratings		
	N	Mean	$\sigma$
34	386	12.54	1.45
35	366	12.38	1.72
36	142	12.19	1.41
37	40	12.43	1.39
38	41	12.22	1.96
39	348	12.59	1.50
40	405	12.53	1.60
41	392	12.41	1.87
42	396	12.53	1.75
43	196	11.92	1.76
44	193	12.12	1.88
45	190	12.59	1.52
46	250	12.13	1.67
47	105	12.20	1.52
48	396	12.25	1.58
49	73	12.81	1.42
50	437	12.95	1.29
51	424	12.93	1.42
52	463	12.71	1.56
53	285	12.58	1.59
54	393	12.61	1.41
55	386	12.82	1.42



Table  
Figure 10  
Relationship of Incumbent, Supervisor, and Peer  
Mean Task Performance Ratings

AFSC/Rater	Range of Mean		Per Cent of Tasks For AFSC				
	Low	High	Highest	Tied for Highest	Middle	Tied for Lowest	Lowest
291X0 Incumbent	5.13	6.44	0	0	2	2	96
Supervisor	5.65	6.64	45	8	45	2	0
Peer	5.71	6.63	47	8	43	2	0
304X4 Incumbent	5.01	5.79	0	0	1	0	99
Supervisor	5.42	6.16	39	7	54	0	0
Peer	5.25	6.09	54	7	38	0	1
431X1-C Incumbent	4.96	6.36	0	0	5	0	95
Supervisor	5.54	6.59	73	2	24	0	2
Peer	5.63	6.38	25	2	69	0	4

Table  
Figure 11  
Relationship of the Standard Deviation of Task  
Performance Ratings of Incumbents, Supervisors, and Peers

AFSC/Rater	Range of $\sigma$		Per Cent of Tasks For AFSC				
	Low	High	Highest	Tied for Highest	Middle	Tied for Lowest	Lowest
291X0 Incumbent	.98	1.69	86	0	6	0	8
Supervisor	.79	1.59	10	0	20	2	69
Peer	.85	1.60	4	0	73	2	22
304X4 Incumbent	1.04	1.50	77	2	8	3	10
Supervisor	.93	1.28	2	2	39	7	50
Peer	.95	1.46	16	4	42	4	33
431X1-C Incumbent	.97	1.59	78	0	16	0	5
Supervisor	.78	1.41	9	2	20	5	64
Peer	.97	1.50	11	2	56	5	25

The distribution of incumbent ratings in terms of the percent using each rating scale point are shown in <sup>Tables</sup> ~~Figures~~ 12, 13, and 14. Similar distributions for the ratings of supervisors and peers are shown in <sup>Tables</sup> ~~Figures~~ 15, 16, and 17.

For AFSC 291X0, the modal incumbent response for all 51 task dimensions was 7, the highest point on the scale. For most tasks this highest rating was used by between 40% to 60% of the incumbent respondents. Point 6 of the scale was the next most frequently used point usually accounting for between one-fourth to one-third of the responses. Thus, approximately two thirds to three fourths of all incumbent responses for AFSC 291X0 were the top two ratings. For most tasks, all points on the scale were used by some incumbents but the bottom three points usually were used by only between 5% to 15% of the sample.

For AFSC 304X4, the distribution of ratings was somewhat different. For 72 of the 92 task dimensions, the modal rating point used was 6, the second highest. For 15 of the task dimensions, the modal point was 5. For the remaining 5 task dimensions the modal point used was 7. The theoretical middle point 4 was used by between 10% to 20% of the incumbents for most of the task dimensions in this career field. For most tasks, all of the points on the scale were used by some incumbents but the bottom three points usually were used by only between 5% to 10% of the sample.

For AFSC 431X1-C, the modal incumbent response for 40 of the 55 task dimensions was 7. For 11 of the task dimensions, the modal point was 6 and for the remaining 4 task dimensions the modal point was 5. Again for this career field, all points on the rating scale were used by some incumbents, but the bottom three points were usually used by only between 5% to 15% of the sample.

While there was a tendency for incumbent ratings of task level performance to pile up at the high end of the scale for all three career ladders, there were differences between ladders and there were some intra-task differences within at least two of the ladders. The reasons for such differences are not immediately apparent. The tasks within AFSC 291X0 tended to be less technical and at least in the judgment of the contractor staff somewhat less difficult than many in the other two AFSC's. The extreme loading on the top rating point for this AFSC could reflect a lack of actual performance variance in the field. Many of the tasks for AFSC 304X4 were of a more technical nature and tended to be more oriented toward specific hardware classes. This could account for the greater variance in obtained ratings



Table  
Figure 12  
Distribution of Performance Ratings Made By  
Incumbents for AFSC 291X0

Task Dimension	Rating Scale Points							N
	1	2	3	4	5	6	7	
1	1	1	2	5	12	21	59	1066
2	2	1	3	13	26	24	30	835
3	1	1	2	9	19	29	39	800
4	3	7	5	13	21	22	29	977
5	5	3	7	15	23	23	24	708
6	4	2	5	10	26	27	27	680
7	2	1	3	8	22	28	38	924
8	2	1	1	6	12	20	58	1002
9	1	1	1	6	10	29	52	1029
10	1	1	3	10	17	24	42	984
11	2	0	4	10	21	30	33	958
12	1	1	3	8	20	31	36	945
13	0	0	0	5	15	29	50	1090
14	1	1	2	6	13	26	51	958
15	1	1	2	7	17	28	44	1056
16	0	0	1	5	12	28	52	1003
17	2	1	4	7	17	26	44	892
18	1	1	2	7	18	29	42	830
19	1	0	1	7	15	32	44	970
20	1	0	2	7	14	28	48	1002
21	1	0	1	6	12	26	54	950
22	1	1	3	8	13	26	48	886
23	2	1	4	8	13	23	50	812
24	1	1	3	10	17	27	42	831
25	2	1	2	6	12	22	54	817
26	1	1	3	6	13	21	56	1041
27	0	0	3	8	16	28	44	1036
28	1	1	2	7	16	30	43	833
29	2	1	2	6	16	32	40	758
30	1	0	2	6	12	28	51	835

Table  
~~Figure 12~~  
 Distribution of Performance Ratings Made By  
 Incumbents for AFSC 291X0  
 Cont'd

Task Dimension	Rating Scale Points							N
	1	2	3	4	5	6	7	
31	2	0	1	7	14	25	51	626
32	2	0	2	8	14	27	46	608
33	3	1	1	7	11	26	50	619
34	4	1	1	9	10	27	47	591
35	5	2	4	11	14	26	39	469
36	5	3	4	12	14	25	38	388
37	4	1	2	8	12	24	47	556
38	5	1	2	9	15	24	43	519
39	6	2	2	11	13	25	40	561
40	2	1	4	8	12	23	51	785
41	2	1	5	10	14	21	48	765
42	3	1	4	10	14	22	47	797
43	3	2	4	11	17	25	39	714
44	2	1	3	8	12	25	48	724
45	3	1	4	11	13	20	48	778
46	1	0	2	3	8	17	68	858
47	2	1	2	7	12	23	53	895
48	2	1	2	8	16	28	44	778
49	1	1	2	6	14	24	51	935
50	0	1	1	7	20	31	40	843
51	1	0	1	5	7	16	69	954

Note: Cell entries are percentage of incumbent ratings.

Table  
Figure 13  
Distribution of Performance Ratings Made By  
Incumbents for AFSC 304X4

Task Dimension	Rating Scale Points							N
	1	2	3	4	5	6	7	
1	1	3	9	17	34	24	12	473
2	1	1	8	18	26	27	18	288
3	1	2	8	19	33	24	13	417
4	3	1	8	19	29	24	16	277
5	1	2	4	15	23	27	30	452
6	1	0	4	16	28	28	22	406
7	1	1	3	13	29	33	22	319
8	1	1	4	16	31	32	16	350
9	0	2	4	14	28	30	22	347
10	0	0	4	8	26	35	26	302
11	1	1	2	11	21	34	31	311
12	1	2	3	17	28	25	24	191
13	1	2	5	15	20	31	25	210
14	2	3	4	19	23	25	25	189
15	1	1	5	19	24	31	18	203
16	1	1	3	16	26	29	25	268
17	1	1	4	17	23	31	23	246
18	1	2	5	17	26	27	21	242
19	1	1	5	15	24	31	22	375
20	1	3	6	18	30	28	14	357
21	1	0	2	14	20	34	28	475
22	1	1	3	12	22	32	29	380
23	2	0	3	17	26	24	27	122
24	1	3	1	16	25	27	27	77
25	1	1	3	17	24	26	28	296
26	1	1	1	14	21	33	29	297
27	1	1	2	16	20	30	30	252
28	1	1	1	15	21	34	28	398
29	1	1	4	14	24	38	19	368
30	0	0	3	12	24	34	27	382

Table  
Figure 13  
Distribution of Performance Ratings Made By  
Incumbents for AFSC 304X4  
Cont'd

Task Dimension	Rating Scale Points							N
	1	2	3	4	5	6	7	
31	1	1	4	11	23	34	27	128
32	1	1	4	11	28	28	28	138
33	1	1	4	14	23	31	25	329
34	1	1	2	13	23	35	25	326
35	2	1	4	14	23	33	24	255
36	1	1	3	17	24	36	17	363
37	1	1	5	18	25	31	19	426
38	1	1	1	12	24	29	33	296
39	0	2	2	19	23	24	31	126
40	1	2	4	17	18	32	26	117
41	1	1	4	14	21	31	28	232
42	1	0	2	11	25	34	26	314
43	0	1	4	12	27	35	20	372
44	2	2	6	18	28	26	18	266
45	3	2	5	21	29	22	17	92
46	2	1	6	20	25	25	20	132
47	1	2	4	15	24	31	23	350
48	1	1	7	18	24	29	19	294
49	0	1	5	16	31	33	14	373
50	0	1	2	9	33	33	22	330
51	1	2	5	13	28	28	24	304
52	1	3	3	17	25	27	24	144
53	1	2	3	18	24	32	20	120
54	1	2	3	15	24	33	22	327
55	1	2	5	19	21	34	19	308
56	0	1	3	16	29	36	14	358
57	1	0	4	13	30	36	16	411
58	1	2	6	18	27	24	21	341
59	1	1	6	14	19	29	30	257
60	0	1	3	13	18	33	31	287
61	1	0	4	17	22	33	22	305
62	1	5	5	19	25	29	16	166



Table  
Figure 13  
Distribution of Performance Ratings Made By  
Incumbents for 304X4  
Cont'd

Task Dimension	Rating Scale Points							N
	1	2	3	4	5	6	7	
63	0	2	5	12	26	33	20	251
64	0	0	4	16	28	37	15	283
65	0	1	1	13	18	37	29	337
66	0	0	2	12	20	36	30	290
67	1	0	2	10	27	38	20	411
68	1	0	2	7	27	35	28	347
69	1	0	4	15	24	32	23	353
70	1	1	4	11	26	35	22	414
71	1	0	3	12	24	39	21	418
72	1	1	2	9	23	37	28	352
73	1	1	3	10	23	32	29	337
74	2	2	4	23	25	24	20	92
75	2	2	7	16	30	21	21	82
76	3	0	4	16	28	29	21	80
77	1	1	3	12	20	36	28	329
78	1	0	2	18	21	32	26	268
79	1	1	4	19	23	29	24	236
80	1	0	2	16	25	37	20	322
81	0	1	2	10	23	41	23	411
82	1	1	4	9	25	37	23	377
83	1	1	3	9	29	34	24	255
84	2	5	3	15	19	33	22	129
85	1	1	2	15	26	38	15	285
86	1	2	5	10	23	33	27	236
87	2	3	5	18	20	28	24	130
88	1	0	2	17	24	36	19	295
89	1	1	2	13	22	43	18	350
90	1	0	4	13	22	40	20	312
91	3	3	5	14	20	30	24	217
92	1	3	3	15	25	32	21	390

Note: Cell entries are percentage of incumbent ratings.

Table  
Figure 14  
Distribution of Performance Ratings Made By  
Incumbents for AFSC 431X1-C

Task Dimension	Rating Scale Points							N
	1	2	3	4	5	6	7	
1	1	1	4	12	22	24	36	1225
2	1	1	5	12	26	27	28	1233
3	1	2	6	13	23	28	27	1314
4	3	4	9	18	25	20	21	1038
5	1	1	2	9	18	31	39	1359
6	2	2	6	14	24	26	27	1234
7	0	1	2	10	18	28	41	1175
8	1	2	4	14	25	28	26	988
9	3	3	7	14	19	22	33	1012
10	1	1	3	8	16	23	48	1322
11	0	1	2	7	22	36	31	1334
12	1	1	3	12	19	30	34	1196
13	2	4	9	19	30	22	15	1237
14	2	2	3	10	18	27	37	812
15	2	1	1	5	8	17	66	826
16	1	2	4	10	19	27	37	801
17	1	1	2	9	19	31	37	780
18	1	1	4	12	28	27	28	857
19	1	0	2	7	17	31	42	1234
20	4	4	9	16	25	23	20	1178
21	1	2	5	12	23	27	30	1324
22	1	1	2	9	13	27	47	1275
23	2	2	2	6	11	28	49	871
24	2	1	2	5	12	22	57	834
25	0	1	2	5	15	30	47	1319
26	1	0	2	7	17	33	40	1239
27	0	1	1	7	15	38	37	1212
28	0	0	2	6	15	31	46	1232
29	0	0	1	4	10	25	60	1162
30	1	1	1	4	10	27	56	1225

Table  
Figure 14  
Distribution of Performance Ratings Made By  
Incumbents for AFSC 431X1-C  
Cont'd

Task Dimension	Rating Scale Points							N
	1	2	3	4	5	6	7	
31	0	1	3	10	18	35	33	1250
32	0	1	2	10	23	33	31	1068
33	1	1	2	8	15	24	50	1188
34	0	1	2	7	12	29	50	1223
35	1	0	3	7	14	29	47	1178
36	0	1	3	10	20	33	33	758
37	1	1	3	12	23	31	28	738
38	2	0	2	8	17	31	41	696
39	1	1	2	6	12	25	53	1222
40	1	1	2	6	14	28	48	1204
41	1	0	2	5	13	29	49	1214
42	1	0	1	5	13	30	49	1204
43	1	1	3	11	25	33	26	1037
44	1	1	2	9	19	30	38	1012
45	0	1	2	5	16	32	44	1011
46	0	1	2	10	20	33	34	1064
47	1	1	4	10	25	34	26	851
48	0	1	1	8	24	38	27	1201
49	3	1	2	7	13	19	55	695
50	1	1	0	5	10	21	62	1240
51	2	1	1	5	10	22	60	1208
52	1	0	2	4	10	24	58	1256
53	1	0	2	6	13	27	51	1038
54	0	1	2	6	15	29	46	1106
55	2	1	2	5	11	22	58	1224

Note: Cell entries are percentage of incumbent ratings.

Table

Figure 15

Distribution of Performance Ratings Made By  
Supervisors and Peers for AFSC 291X0

Task Dimension	Supervisors Rating Scale Points								Peers Rating Scale Points							
	1	2	3	4	5	6	7	N	1	2	3	4	5	6	7	N
1	0	0	1	3	12	22	62	624	1	1	1	4	13	26	56	441
2	1	2	4	7	18	36	31	374	2	0	3	8	17	28	42	271
3	1	3	5	8	12	29	42	363	1	2	3	7	16	24	47	280
4	2	7	3	6	1	25	40	663	2	7	3	5	17	26	42	398
5	2	1	4	8	19	34	33	266	3	1	2	5	17	27	44	212
6	1	0	4	6	18	30	41	274	2	0	1	6	15	32	44	211
7	0	1	2	6	17	30	45	583	1	1	2	8	16	26	47	380
8	1	1	0	2	11	24	62	538	1	0	1	5	10	19	63	343
9	0	1	1	4	13	24	57	603	1	1	1	4	12	27	56	412
10	0	1	4	8	16	28	42	544	1	1	3	7	16	26	47	383
11	1	2	3	7	19	30	39	531	1	1	2	6	17	32	40	379
12	0	1	3	5	17	30	45	516	1	1	2	8	14	29	45	370
13	0	1	2	3	11	26	58	664	0	0	0	4	10	25	61	452
14	0	1	1	2	9	22	66	549	1	0	1	2	12	20	64	355
15	1	1	3	6	15	29	45	624	2	1	2	6	12	28	50	435
16	1	0	2	4	11	27	55	588	1	1	2	5	12	28	52	410
17	1	1	2	3	13	28	53	419	2	2	1	5	10	25	56	269
18	1	4	2	3	16	25	49	627	2	3	1	5	15	27	47	437
19	1	1	2	4	12	30	51	614	1	1	1	3	12	26	55	381
20	1	0	2	3	14	28	53	598	1	1	1	3	9	26	59	382
21	0	0	1	2	11	24	61	529	0	0	1	3	12	26	58	356
22	0	0	2	4	13	21	60	511	1	0	2	4	11	22	60	326
23	1	1	1	2	10	15	70	424	0	1	1	3	12	18	70	298
24	1	1	1	2	12	22	62	406	1	0	0	5	10	23	61	252
25	0	1	1	1	12	24	61	503	1	1	1	4	9	20	65	304
26	2	1	2	5	11	21	58	591	1	1	2	5	11	17	64	400
27	0	1	1	4	13	26	56	604	1	0	1	3	12	28	54	371
28	0	0	2	4	15	25	53	450	1	0	1	5	14	29	51	290
29	0	1	2	3	16	29	49	430	0	1	1	3	17	26	52	276
30	0	0	0	2	8	20	69	463	0	0	0	4	7	25	64	302
31	0	1	1	1	10	23	65	208	1	0	1	5	8	19	66	216
32	0	1	2	3	10	20	63	210	2	1	1	5	12	30	52	199
33	0	0	2	2	12	27	58	215	2	0	1	6	14	26	52	171



Table  
Figure 15  
Distribution of Performance Ratings Made By  
Supervisors and Peers for AFSC 291X0  
Cont'd.

Task Dimension	Supervisors Rating Scale Points								Peers Rating Scale Points							
	1	2	3	4	5	6	7	N	1	2	3	4	5	6	7	N
34	0	1	1	2	15	23	58	208	1	0	4	4	13	24	54	160
35	0	2	1	2	17	25	54	114	1	0	2	10	11	24	51	90
36	0	1	2	5	16	27	50	139	1	0	1	7	11	26	54	110
37	0	0	3	2	12	23	61	190	1	0	1	4	7	23	63	139
38	0	1	2	4	10	21	63	178	1	1	2	7	11	25	55	134
39	1	1	3	3	13	24	56	185	2	2	0	6	15	23	52	134
40	1	1	3	6	14	28	48	361	1	0	3	5	10	27	58	216
41	1	1	3	5	14	27	51	405	1	1	3	6	8	26	55	243
42	1	1	5	5	20	25	44	356	1	0	4	6	11	24	54	224
43	0	1	3	6	17	30	44	306	1	1	3	6	9	24	56	180
44	0	1	1	3	10	28	57	323	1	0	2	4	10	20	64	189
45	1	1	4	8	16	25	45	357	1	1	3	7	9	24	55	226
46	0	0	1	1	5	16	77	443	2	0	0	2	4	16	77	269
47	1	0	1	2	11	22	63	468	2	1	1	3	8	20	65	306
48	0	0	1	2	12	24	62	288	1	1	1	4	11	23	61	160
49	1	0	2	3	12	28	55	537	0	1	1	3	9	27	58	349
50	0	1	2	3	14	31	49	506	1	1	1	4	12	26	55	319
51	0	0	1	1	5	14	77	541	1	0	2	2	6	13	76	321

Note: Cell entries are percentage of first supervisor and first peer ratings.

**Table**  
**Figure 16**  
**Distribution of Performance Ratings Made By**  
**Supervisors and Peers for AFSC 304X4**

Task Dimension	Supervisors Rating Scale Points								Peers Rating Scale Points							
	1	2	3	4	5	6	7	N	1	2	3	4	5	6	7	N
1	0	1	4	14	29	33	19	247	1	3	5	13	32	28	20	200
2	0	3	4	12	21	34	26	249	2	2	8	10	22	31	25	196
3	1	2	7	10	27	32	21	366	0	2	4	11	32	31	18	293
4	0	4	1	14	29	31	22	185	1	4	7	14	18	31	25	141
5	1	2	3	7	21	34	34	399	1	1	3	8	19	36	33	340
6	1	1	4	8	26	38	22	391	1	1	2	8	22	35	31	328
7	0	1	4	7	26	37	25	375	1	2	3	9	26	34	26	322
8	0	0	1	11	21	37	30	235	0	1	2	7	19	41	30	223
9	0	2	3	10	30	26	29	231	1	1	1	9	22	37	29	222
10	0	0	3	8	24	36	28	228	1	1	2	7	21	38	31	212
11	2	2	3	9	19	31	34	205	1	1	2	7	23	32	33	188
12	0	2	3	7	16	32	40	112	0	1	2	9	18	35	35	94
13	0	1	1	7	18	33	40	100	0	0	2	9	13	44	33	92
14	0	1	4	5	16	39	34	74	0	0	3	5	16	41	35	58
15	0	1	2	5	23	33	36	132	0	2	3	7	15	39	34	137
16	0	1	4	7	23	34	31	189	1	1	5	10	29	29	25	153
17	0	1	1	3	22	43	31	206	0	1	3	9	21	35	32	168
18	1	1	2	7	26	38	26	178	0	1	4	8	22	36	29	133
19	0	1	3	7	24	37	29	258	0	1	3	11	24	36	25	241
20	1	1	4	12	30	29	24	243	1	2	4	10	25	35	22	249
21	1	2	1	6	22	32	37	395	1	1	4	7	20	35	33	329
22	1	2	2	6	21	38	32	314	1	2	4	5	18	33	38	264
23	0	2	2	5	17	31	43	42	0	2	4	13	17	38	26	53
24	0	2	2	6	32	33	26	54	0	3	3	3	32	32	27	37
25	1	1	2	6	20	35	36	225	1	1	2	7	22	34	34	177
26	0	2	2	4	19	37	37	240	0	1	2	7	21	34	35	179
27	0	2	2	6	23	37	30	224	1	1	2	5	20	36	36	152
28	0	2	2	7	20	34	35	338	1	1	3	7	20	35	33	285
29	1	1	2	8	27	36	26	386	0	1	3	8	24	36	28	313
30	0	1	2	7	23	39	30	315	0	1	4	6	21	34	34	267
31	0	2	0	4	15	40	39	52	0	0	8	4	23	33	33	52
32	0	2	4	6	22	35	32	54	0	0	8	3	23	38	30	40
33	0	1	3	7	20	38	32	252	0	2	3	4	26	40	25	185

Table  
Figure 16  
Distribution of Performance Ratings Made By  
Supervisors and Peers for AFSC 304X4  
Cont'd.

Task Dimension	Supervisors Rating Scale Points								Peers Rating Scale Points							
	1	2	3	4	5	6	7	N	1	2	3	4	5	6	7	N
34	0	0	1	4	22	39	34	254	0	1	2	7	16	39	36	200
35	0	1	2	6	23	38	30	235	1	1	3	7	19	40	31	169
36	0	1	2	7	25	38	27	345	0	0	3	9	22	38	28	289
37	0	0	2	7	28	38	26	330	1	2	1	5	21	42	29	283
38	1	2	1	5	23	36	33	273	1	1	2	5	17	35	39	243
39	0	2	0	2	16	33	47	43	0	2	4	7	20	33	33	45
40	0	2	0	9	23	33	33	43	0	0	7	7	33	42	23	31
41	1	2	2	5	24	40	27	187	1	0	1	6	23	37	32	139
42	0	1	1	7	23	42	26	307	0	1	1	7	23	37	32	257
43	0	1	2	10	25	38	23	304	0	1	5	8	22	35	29	255
44	1	2	3	9	22	37	25	228	0	2	7	10	21	36	24	173
45	0	2	0	4	26	30	38	47	0	0	9	9	26	28	28	43
46	0	2	2	21	19	38	19	48	0	0	13	7	17	37	27	30
47	0	0	3	4	26	39	28	234	0	1	2	9	22	33	33	186
48	0	2	3	6	30	37	22	219	0	1	2	7	27	35	29	151
49	0	1	2	8	30	34	26	334	0	2	2	9	22	39	26	290
50	0	0	3	9	23	38	27	271	0	1	4	7	17	39	32	247
51	0	2	3	8	23	35	29	203	1	2	5	4	23	40	26	168
52	0	3	0	8	15	33	41	39	2	0	2	12	22	29	32	41
53	0	2	4	11	29	31	22	45	0	0	7	10	28	28	28	29
54	0	1	3	4	28	36	29	222	0	1	2	6	20	39	32	173
55	1	2	4	5	29	42	18	202	1	1	1	6	21	38	32	143
56	0	1	2	10	22	40	25	332	0	1	3	5	20	41	29	277
57	1	1	4	7	29	32	26	394	0	2	4	11	24	35	24	353
58	1	1	5	9	26	30	28	361	2	1	4	11	24	33	25	333
59	1	1	2	6	22	34	33	207	1	2	2	6	18	38	33	167
60	0	1	2	2	21	33	41	221	1	0	1	4	19	35	41	184
61	0	1	2	6	21	42	29	291	1	1	2	6	20	41	30	251
62	1	1	2	8	27	33	29	101	0	2	7	3	24	41	22	90
63	1	1	2	12	22	37	26	219	1	1	3	8	21	40	27	184
64	0	1	3	6	27	40	24	318	0	1	3	5	25	42	25	253
65	0	0	2	5	20	36	38	323	0	0	2	6	17	40	34	272
66	0	1	1	8	20	35	35	315	1	0	2	7	14	41	34	268

Table  
Figure 16  
Distribution of Performance Ratings Made By  
Supervisors and Peers for AFSC 304X4  
Cont'd.

Task Dimension	Supervisors Rating Scale Points								Peers Rating Scale Points							
	1	2	3	4	5	6	7	N	1	2	3	4	5	6	7	N
67	0	1	3	8	25	35	29	373	1	1	3	5	21	36	33	330
68	0	1	1	8	18	41	30	360	0	1	1	5	20	41	32	308
69	0	1	2	7	25	34	31	260	1	1	2	8	18	37	35	226
70	0	1	3	7	23	34	32	367	1	1	2	8	19	37	32	328
71	0	2	3	9	23	34	30	385	1	2	2	6	22	32	35	331
72	0	0	3	5	20	36	35	375	0	2	1	7	20	36	34	312
73	0	1	2	10	23	32	33	251	1	1	2	7	15	42	32	219
74	0	1	7	9	24	26	33	70	0	3	3	8	23	34	28	64
75	0	3	3	5	23	23	45	40	0	3	3	11	17	31	36	36
76	0	2	2	15	27	34	20	41	0	0	8	0	25	50	17	24
77	0	0	2	5	21	40	32	285	0	1	2	5	24	38	21	216
78	0	1	4	2	23	36	35	191	0	1	2	5	18	42	32	145
79	1	3	5	4	24	38	26	173	0	1	2	5	20	43	29	124
80	0	0	2	7	27	37	28	301	0	1	3	6	19	43	29	252
81	0	1	3	7	25	34	30	388	0	2	2	8	18	39	31	334
82	1	2	3	8	24	36	28	375	1	2	5	8	21	35	29	316
83	0	2	3	9	28	28	31	194	1	1	1	7	18	46	27	169
84	0	1	1	8	22	35	33	79	0	0	2	8	17	43	30	60
85	0	1	0	8	18	36	36	72	0	2	2	6	22	34	33	207
86	1	2	2	8	27	32	29	182	1	1	1	5	21	40	31	156
87	0	1	0	8	18	36	36	72	0	0	2	12	22	31	34	59
88	0	1	1	8	27	36	27	293	0	1	2	7	21	38	31	238
89	0	1	3	9	26	34	89	324	0	1	3	8	21	37	30	276
90	0	2	3	8	23	36	28	317	0	1	3	9	20	35	31	271
91	0	1	4	13	24	28	30	135	0	1	2	6	22	38	31	125
92	1	2	4	10	21	30	33	428	2	2	5	9	20	30	32	347

Note: Cell entries are percentage of first supervisor and first peer ratings.



**Table 17**  
**Figure 17**  
 Distribution of Performance Ratings Made By  
 Supervisors and Peers for AFSC 431X1-C

Task Dimension	Supervisors Rating Scale Points								Peers Rating Scale Points							
	1	2	3	4	5	6	7	N	1	2	3	4	5	6	7	N
1	0	0	2	7	24	27	39	743	1	0	1	5	22	27	44	483
2	1	2	5	10	22	27	34	755	2	2	2	5	25	31	34	517
3	1	2	4	9	20	30	35	823	1	1	3	8	23	30	34	542
4	1	2	6	11	25	26	30	420	2	1	1	8	24	27	36	247
5	1	1	2	6	21	30	39	811	1	1	1	4	17	35	41	586
6	1	1	4	8	17	27	43	598	2	2	4	8	25	28	33	460
7	1	1	2	8	12	29	47	600	1	1	2	7	20	29	40	464
8	0	1	1	4	22	35	36	516	1	2	2	6	25	32	32	324
9	1	1	2	4	14	22	56	438	3	2	3	6	18	26	43	290
10	0	1	1	3	12	25	57	776	1	1	1	3	14	27	54	554
11	0	1	1	5	18	34	40	751	0	1	1	4	19	35	41	557
12	0	1	2	4	17	33	44	609	1	0	1	7	19	33	40	396
13	2	1	4	9	30	28	26	555	1	1	3	8	25	34	27	368
14	1	1	2	6	15	24	53	334	1	1	1	2	15	33	49	279
15	0	0	0	2	7	19	71	314	1	0	0	3	11	24	62	277
16	1	2	1	6	17	26	46	298	1	0	2	6	14	34	44	236
17	2	1	2	6	17	29	44	282	0	0	2	6	14	32	46	231
18	0	1	2	7	17	36	38	517	1	1	0	5	19	33	41	325
19	2	1	2	6	16	24	51	684	2	1	2	5	17	31	43	518
20	2	3	3	10	22	30	29	708	2	2	5	6	26	28	30	449
21	1	2	4	7	21	28	38	796	1	2	3	7	20	31	37	537
22	0	1	1	4	13	25	56	776	1	1	1	4	15	27	51	564
23	1	1	1	3	8	23	63	343	2	0	1	4	11	27	56	263
24	0	1	1	3	8	23	64	334	0	0	2	3	13	23	58	257
25	0	1	2	5	13	28	51	765	1	1	2	2	15	31	48	584
26	1	1	3	5	14	24	53	754	1	1	2	4	16	33	45	570
27	1	1	2	5	13	28	51	739	1	1	1	2	17	35	42	559
28	0	1	1	4	15	30	50	587	1	1	1	3	16	28	51	432
29	0	0	1	3	10	29	57	578	1	1	1	2	13	24	59	426
30	0	1	1	2	8	20	68	651	1	1	1	3	10	24	61	505
31	1	1	2	4	19	32	42	648	1	1	1	5	18	34	42	426
32	0	1	1	6	21	33	39	454	0	0	1	5	20	33	41	298
33	1	1	2	3	11	27	56	552	1	1	1	4	14	28	52	367

Table  
Figure 17  
Distribution of Performance Ratings Made By  
Supervisors and Peers for AFSC 431X1-C  
Cont'd

Task Dimension	Supervisors Rating Scale Points								Peers Rating Scale Points							
	1	2	3	4	5	6	7	N	1	2	3	4	5	6	7	N
34	0	1	1	4	11	31	53	666	1	0	1	3	16	31	46	447
35	0	1	1	4	13	30	50	647	1	0	2	2	17	32	46	431
36	0	0	1	3	20	36	40	318	1	1	2	4	21	32	40	214
37	0	0	2	3	19	33	42	156	1	0	4	7	17	27	45	123
38	1	1	1	2	13	35	48	162	2	0	2	4	19	24	50	123
39	0	0	1	4	13	25	57	634	1	1	1	3	14	27	53	440
40	1	0	1	4	13	26	57	655	1	0	1	3	15	27	52	468
41	1	2	1	2	13	24	57	643	2	0	1	5	13	30	50	456
42	1	1	1	3	14	24	56	651	1	0	1	3	15	26	53	458
43	0	1	3	7	21	33	35	412	1	1	1	8	18	37	35	299
44	0	1	3	6	17	34	40	406	1	1	1	4	21	30	42	295
45	1	0	2	4	14	29	51	411	1	0	0	6	14	30	50	295
46	0	1	1	5	17	36	39	492	1	1	1	6	15	36	41	323
47	0	1	2	4	18	35	39	282	1	1	1	8	16	30	43	207
48	0	1	1	4	16	34	44	692	1	1	1	4	17	35	42	465
49	1	1	0	3	10	12	74	131	1	1	3	5	13	21	57	159
50	0	0	1	2	7	18	72	692	1	0	1	2	11	25	61	506
51	0	1	1	2	8	16	72	643	2	1	1	2	9	25	60	484
52	0	0	1	3	12	25	59	706	1	0	0	3	10	26	59	531
53	0	1	2	3	13	23	58	406	1	0	1	4	11	29	54	379
54	0	1	1	2	14	27	55	664	1	0	1	4	13	30	52	441
55	0	1	1	3	8	23	65	644	1	1	1	3	10	26	58	439

Note: Cell entries are percentage of first supervisor and first peer ratings

for this AFSC. For many of the tasks somewhat explicit standards for the accuracy of task completion were available in terms of hardware tolerances. This may make it easier for incumbents to assess task performance more realistically. It should also be noted that the mean task ratings for AFSC 304X4 were lower than for the other two career fields. Even though this AFSC has only school trained input as opposed to a mixed input for AFSC 291X0, there appears to be more performance variance in the field and at least incumbent ratings of self-performance somewhat reflect this.

AFSC 431X1-C showed some of the extreme high end loading on many of the tasks but there were exceptions on about one quarter of the tasks in the career field. This appears to illustrate that at least incumbents do recognize differences in performance of the various tasks which make up their jobs and are not reluctant to report such differences.

The rating distributions for supervisor and peer ratings of task performance tend to reflect the same trends found in the incumbent ratings for the three career fields. AFSC 291X0 has the greatest pile up at the extreme high end with a modal response of 7 for most of the tasks. For both AFSC 304X4 and AFSC 431X1-C the modal response of supervisors and peers tended to be 6 for most of the tasks. There were only small differences in the rating distributions of supervisor and peer ratings of performance for all three career fields. As a group, supervisors and peers used the bottom three points on the rating scale much less frequently than did incumbents. They also used the mid-point rating of 4 considerably less frequently than did the incumbents. (Insert text and Figure 1.)

Summary: The distributional characteristics of the task performance ratings indicate that at least some performance variance at the task level is apparent in the field and that survey rating procedures can capture some of that variance. Some differences between the three career fields were noted. In all cases, mean incumbent ratings of task performance were lower than ratings on <sup>corresponding</sup> similar tasks made by supervisors or peers. The variance of incumbent ratings also tended to be somewhat greater than that of supervisors and peers. For AFSC 291X0, mean supervisor and peer performance ratings tended to be about evenly split in terms of the highest mean ratings. For AFSC 304X4, peers rated higher than supervisors on 54% <sup>percent</sup> of the tasks while for AFSC 431X1-C, supervisors rated higher than peers on 73% <sup>percent</sup> of the tasks.



All of the performance rating distributions were negatively skewed. AFSC 291X0 had the worst high end pile up, AFSC 304X4 the least, with AFSC 431X1-C in-between. In terms of scale point usage, approximately 85% percent of the incumbent sample used only the top four scale points for most task dimensions. About 80% percent of the supervisor and peer sample used only the top three scale points. It appears, therefore, that a task level approach to rating job performance does not greatly alleviate the problem of rating skew found when a more global approach is used.

#### Distributive Characteristics of Skill and Ability Versus Motivation Ratings

Introduction: In addition to a task performance level rating, supervisors and peers were asked to make a rating for each task dimension which reflected their judgment of the extent to which the incumbent worked up to his potential for that task dimension. This rating was made using one of five categories. A 5 rating indicated that the incumbent was usually working up to his potential capacity. A 4 indicated that he usually performed somewhat below his potential capacity on the task dimension mainly because he needed more training on it. A 3 indicated that he usually performed somewhat below his potential capacity because he needed more training and because he usually didn't put forth the care and effort needed to do his best. A 2 indicated that he usually performed somewhat below his potential on the task mainly because he usually didn't put forth the care and effort needed to do his best. A 1 indicated that he often performed well below his potential capacity on the task mainly because he often didn't put forth the care and effort needed to do better. This scale was used in an attempt to collect data bearing on the question of how much of the variance in reported task performance was due to skill factors and how much was due to motivational factors. It was based on the concept of deficit between potential capacity and actual performance. The total scale was not truly linear. Point 5 indicated essentially no deficit. Point 4 indicated a small deficit due almost entirely to training needs. Points 3 and 2 indicated a small deficit attributable to a mixture of skill and motivational factors. Point 1 indicated a greater deficit due almost entirely to motivational factors. For some correlational analyses reported later a somewhat risky assumption of linearity was made based on a tenuous continuum of greatest deficit to no deficit with the somewhat tacit assumption that deficits attributable to



**Figure 18**  
**Distribution of Skill and Ability Versus Motivation**  
**Ratings Made By Supervisors and Peers for AFSC 291X0**

Task Dimension	Supervisors Rating Scale Points						Peers Rating Scale Points					
	1	2	3	4	5	N	1	2	3	4	5	N
1	0	3	4	13	80	589	2	2	7	16	74	410
2	0	5	10	30	55	368	2	4	10	23	62	279
3	1	6	8	25	60	353	0	5	10	21	64	266
4	1	4	8	19	68	647	2	3	9	24	63	400
5	1	4	10	35	50	264	2	2	8	23	65	210
6	0	3	9	31	57	265	1	2	7	26	64	208
7	0	2	6	25	67	564	2	2	9	21	66	370
8	0	2	3	15	80	523	1	2	5	18	74	333
9	0	2	5	19	74	601	1	2	5	17	75	411
10	1	2	10	26	61	539	1	4	9	27	59	383
11	1	2	9	29	59	529	1	2	8	31	58	373
12	0	3	8	27	61	526	1	4	8	25	62	375
13	1	2	6	18	74	659	1	1	6	17	74	435
14	0	1	3	16	80	545	1	1	3	18	76	350
15	1	3	7	22	68	617	1	2	8	22	67	425
16	0	2	7	20	71	575	2	3	6	22	68	400
17	0	2	5	21	72	416	2	0	8	18	73	269
18	1	5	6	19	70	615	1	2	8	21	68	428
19	0	2	8	22	68	609	1	1	6	21	71	376
20	0	2	7	17	73	588	1	2	5	19	73	378
21	0	2	4	17	76	520	1	1	6	19	73	349
22	0	3	6	17	73	499	1	2	7	17	73	325
23	1	3	4	11	82	422	1	2	6	11	80	302
24	1	2	4	14	79	405	1	1	9	18	72	250
25	0	2	3	18	76	498	2	2	6	18	73	304
26	2	5	8	16	70	578	2	4	7	17	71	396
27	0	2	4	22	71	594	1	1	8	19	71	361
28	1	4	6	19	70	443	1	2	7	19	72	286
29	1	5	5	21	68	431	1	2	8	19	70	274
30	0	1	2	13	84	458	1	1	3	19	77	297
31	0	3	3	15	79	205	2	1	6	15	77	216
32	0	3	3	17	77	205	3	1	5	24	67	193
33	1	3	8	16	72	213	1	5	5	21	68	157

Table  
Figure 18  
Distribution of Skill and Ability Versus Motivation  
Ratings Made By Supervisors and Peers for AFSC 291X0  
Cont'd

Task Dimension	Supervisors Rating Scale Points						Peers Rating Scale Points					
	1	2	3	4	5	N	1	2	3	4	5	N
34	0	3	8	16	74	209	2	5	7	19	67	150
35	0	3	7	17	74	113	1	2	13	26	58	87
36	0	2	7	26	65	139	1	2	7	23	68	102
37	1	4	6	10	80	188	2	2	5	19	72	130
38	0	2	7	14	76	178	1	2	10	23	64	126
39	2	4	6	22	67	190	2	4	9	24	61	123
40	2	4	9	24	62	356	1	2	7	24	66	213
41	1	3	6	24	67	400	1	1	9	21	68	239
42	1	3	10	29	57	353	1	2	10	26	62	220
43	1	3	11	29	57	303	1	2	9	21	68	176
44	1	3	6	22	68	319	1	2	8	18	72	187
45	1	3	11	28	58	355	1	2	9	24	64	224
46	1	1	2	9	86	438	2	2	3	10	83	263
47	1	4	6	13	76	460	3	3	4	13	77	299
48	0	1	2	17	79	286	3	1	4	21	70	159
49	0	2	4	20	74	531	1	2	5	20	73	348
50	0	2	4	22	72	488	1	3	6	16	75	305
51	1	1	2	9	87	541	2	2	5	10	82	321

Note: Cell entries are percentage of first supervisor and first peer ratings

**Figure 19**  
**Distribution of Skill and Ability Versus Motivation**  
**Ratings Made By Supervisors and Peers for AFSC 304X4**

Task Dimension	Supervisors Rating Scale Points						Peers Rating Scale Points					
	1	2	3	4	5	N	1	2	3	4	5	N
1	0	6	13	35	46	247	1	7	12	31	49	201
2	1	7	12	33	47	242	1	6	13	30	50	190
3	1	6	16	35	43	356	1	6	13	35	46	283
4	1	3	16	38	42	184	2	6	18	33	41	141
5	1	5	11	31	52	393	3	4	12	25	58	327
6	3	5	15	36	42	387	2	5	14	27	53	324
7	1	6	13	35	45	374	2	8	13	28	50	317
8	2	3	9	35	52	233	0	5	11	27	57	223
9	0	4	13	36	47	227	2	4	12	35	47	218
10	1	3	15	33	48	222	1	4	11	37	47	207
11	2	3	10	33	52	203	1	5	13	27	55	185
12	1	4	6	31	59	111	1	4	10	36	49	92
13	2	1	7	38	52	100	1	1	10	31	56	87
14	1	0	8	44	47	73	2	4	13	24	58	55
15	2	1	13	32	53	128	1	5	11	29	54	133
16	1	3	9	38	50	186	2	7	17	33	41	148
17	1	2	9	35	53	204	1	6	12	31	51	164
18	1	3	10	40	47	177	1	5	11	28	56	130
19	1	4	12	37	47	257	0	6	13	32	49	233
20	1	4	13	36	46	240	1	5	13	35	46	248
21	3	8	13	23	52	394	3	9	13	21	54	323
22	2	11	12	26	50	313	4	9	14	19	54	262
23	2	7	2	29	60	42	6	8	14	28	45	51
24	6	8	14	33	40	52	6	14	3	31	46	35
25	3	7	9	26	56		6	6	18	18	52	174
26	2	6	12	23	58	240	3	5	14	20	58	172
27	2	7	14	27	50	222	3	7	15	15	59	151
28	2	7	14	23	54		4	7	14	21	54	282
29	1	7	12	33	48	381	1	6	13	27	53	311
30	1	5	12	33	50	310	1	5	15	26	53	261
31	2	11	6	30	51	53	0	12	12	36	40	50
32	2	7	20	22	48	54	0	11	13	37	40	38
33	1	5	11	34	50	248	1	7	17	28	48	185

Table  
Figure 19  
Distribution of Skill and Ability Versus Motivation  
Ratings Made By Supervisors and Peers for AFSC 304X4  
Cont'd

Task Dimension	Supervisors Rating Scale Points						Peers Rating Scale Points					
	1	2	3	4	5	N	1	2	3	4	5	N
34	0	4	9	33	54	254	1	5	12	24	59	199
35	0	6	12	32	50	234	2	2	13	23	60	166
36	1	4	13	36	46	341	1	6	11	29	53	286
37	1	7	14	31	47	326	3	6	15	22	53	280
38	1	3	11	35	51	265	2	6	10	27	55	241
39	0	5	5	25	66	44	2	2	12	40	44	43
40	2	2	14	30	51	43	3	3	7	48	38	29
41	2	2	14	38	45	186	0	6	12	26	58	137
42	1	3	10	38	48	304	1	5	10	29	56	255
43	1	5	11	40	43	303	0	7	12	31	50	253
44	1	5	11	39	44	224	1	8	16	33	43	169
45	2	4	10	27	56	48	0	5	20	34	42	41
46	4	6	19	28	43	47	4	7	7	32	50	28
47	1	2	13	36	48	232	1	3	13	28	55	183
48	1	4	14	39	42	216	1	3	12	30	53	148
49	1	3	12	42	42	330	1	4	11	34	50	286
50	1	6	12	39	43	267	0	7	12	30	51	244
51	1	5	9	41	44	202	2	7	13	30	48	166
52	3	3	8	26	62	39	0	8	15	28	49	39
53	2	9	18	29	42	45	0	11	7	44	37	27
54	1	3	11	35	50	223	1	3	11	23	62	169
55	2	4	13	40	40	201	0	5	13	23	60	142
56	1	4	11	39	45	330	0	6	9	34	52	274
57	1	4	13	40	43	393	1	4	13	32	50	350
58	1	3	12	42	41	355	2	7	11	34	47	328
59	2	2	9	41	47	205	3	4	12	26	55	164
60	1	2	8	31	58	218	0	2	12	21	65	183
61	0	3	10	38	48	290	1	4	10	32	53	249
62	2	0	12	30	56	102	2	5	14	30	49	87
63	1	5	12	37	46	219	2	2	12	28	57	182
64	1	6	11	41	41	316	1	4	11	31	53	249
65	1	4	9	30	56	322	1	4	14	24	57	270
66	0	3	11	34	51	317	1	3	10	28	58	266



Table  
Figure 19  
Distribution of Skill and Ability Versus Motivation  
Ratings Made By Supervisors and Peers for AFSC 304X4  
Cont'd

Task Dimension	Supervisors Rating Scale Points						Peers Rating Scale Points					
	1	2	3	4	5	N	1	2	3	4	5	N
67	1	4	11	39	45	373	2	3	9	35	52	329
68	1	3	13	38	46	360	1	4	10	32	53	302
69	1	5	17	28	49	259	4	5	11	28	52	223
70	1	7	15	27	49	365	3	7	13	25	51	327
71	1	3	13	36	48	384	1	4	12	32	51	329
72	0	3	13	35	49	379	1	5	13	28	53	313
73	1	5	11	40	44	247	2	4	13	29	52	217
74	1	6	12	38	42	69	3	5	19	23	50	64
75	3	3	11	32	53	38	3	8	11	17	61	36
76	2	7	12	34	44	41	4	8	17	38	33	24
77	1	3	8	40	48	283	1	5	10	33	52	215
78	2	2	12	35	49	189	1	3	13	26	57	145
79	4	2	14	38	42	171	0	3	17	23	57	124
80	1	4	11	43	41	300	1	3	11	33	52	253
81	1	2	14	37	46	387	1	4	9	34	53	330
82	1	4	11	36	48	377	1	4	13	33	50	317
83	1	5	8	38	47	194	2	3	13	29	54	167
84	1	1	10	31	56	78	0	5	15	29	51	59
85	1	3	13	41	42	298	0	7	10	33	50	248
86	1	4	13	38	44	181	1	3	13	26	57	156
87	1	1	8	26	63	72	0	5	14	25	56	59
88	1	3	14	40	43	292	0	6	11	32	51	237
89	1	3	12	41	44	322	1	4	10	35	50	276
90	0	4	15	36	45	316	1	5	10	32	52	269
91	1	3	13	47	37	133	2	3	14	32	49	122
92	3	8	16	23	50	427	3	11	15	22	49	347

Note: Cell entries are percentage of first supervisor and first peer ratings

Table  
Figure 20  
Distribution of Skill and Ability Versus Motivation  
Ratings Made By Supervisors and Peers for AFSC 431X1-C

Task Dimension	Supervisors Rating Scale Points						Peers Rating Scale Points					
	1	2	3	4	5	N	1	2	3	4	5	N
1	0	3	10	26	61	731	1	3	8	23	66	466
2	1	7	14	24	54	738	1	4	8	26	61	505
3	2	8	12	24	55	797	1	5	11	27	56	525
4	1	6	13	36	45	428	2	3	5	29	62	264
5	1	6	8	26	60	796	1	3	8	23	65	567
6	1	9	10	21	59	593	3	10	12	26	49	463
7	1	8	8	18	65	597	2	7	10	24	58	466
8	0	2	7	29	62	507	2	4	9	28	57	324
9	1	5	6	18	70	439	3	5	10	21	62	291
10	0	2	6	19	74	766	0	1	6	23	70	547
11	1	3	7	26	63	745	1	2	7	24	66	553
12	0	2	7	28	63	603	1	2	8	25	65	395
13	1	5	14	35	46	551	1	4	13	32	50	366
14	0	2	9	22	67	328	1	2	3	28	66	278
15	0	2	5	14	80	314	1	1	2	22	73	260
16	1	2	11	26	60	300	0	4	8	23	64	235
17	1	5	7	26	61	281	1	3	8	23	65	221
18	0	2	10	29	58	515	2	2	9	26	61	323
19	1	5	9	18	67	680	2	5	7	23	64	512
20	2	11	13	27	47	703	2	9	15	26	49	440
21	1	7	12	25	55	793	2	5	10	25	58	531
22	0	4	7	16	73	768	1	4	6	20	69	552
23	1	1	4	17	77	343	0	2	7	16	76	263
24	0	2	4	17	77	332	0	2	7	19	73	256
25	1	5	8	18	69	765	1	4	7	20	69	580
26	1	5	6	20	69	748	1	4	8	19	68	566
27	1	4	7	20	67	729	1	4	9	22	64	545
28	0	3	7	22	68	583	2	2	7	22	67	434
29	0	2	7	22	70	573	1	3	4	24	69	422
30	0	3	5	13	79	649	1	3	5	17	74	503
31	1	3	11	25	61	645	1	4	8	26	61	420
32	0	2	11	31	56	449	1	3	9	28	60	294
33	1	5	8	15	71	551	2	4	8	22	65	362

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**Figure 20**  
 Distribution of Skill and Ability Versus Motivation  
 Ratings Made By Supervisors and Peers for AFSC 431X1-C  
 Cont'd

Task Dimension	Supervisors Rating Scale Points						Peers Rating Scale Points					
	1	2	3	4	5	N	1	2	3	4	5	N
34	1	3	7	20	69	664	1	3	7	24	66	443
35	1	4	8	21	67	644	1	4	8	26	61	426
36	1	3	6	32	59	319	0	4	8	28	60	210
37	0	1	10	31	58	154	1	3	11	25	60	119
38	1	1	8	22	68	161	1	3	9	24	64	118
39	0	3	8	18	72	630	2	2	8	21	68	437
40	0	3	8	17	73	655	1	3	8	22	67	465
41	1	5	8	17	70	650	1	3	10	20	66	459
42	1	4	8	17	71	630	1	3	8	21	66	444
43	1	1	11	33	54	413	1	2	11	29	57	298
44	1	1	11	28	59	408	1	4	10	32	54	295
45	1	3	8	21	67	408	1	3	9	23	65	296
46	0	3	8	30	60	488	1	2	10	28	60	318
47	0	3	9	29	59	282	2	3	8	29	60	203
48	1	3	8	25	64	690	1	4	8	26	61	458
49	1	2	3	14	81	128	3	1	7	19	71	156
50	1	2	3	10	84	691	1	2	5	17	74	500
51	1	3	4	13	79	643	2	3	7	17	70	479
52	0	4	5	16	74	704	2	2	8	19	69	529
53	1	4	7	15	73	406	1	3	6	19	71	369
54	0	3	8	18	71	659	1	2	5	21	71	436
55	0	3	5	15	77	644	2	3	7	16	73	438

Note: Cell entries are percentage of first supervisor and first peer ratings

motivational factors were somewhat less desirable than those attributable to training needs. Because of the nature of the assumed underlying continuum, results of such analyses must be interpreted with caution.

Percentage Distributions: The distributions of rating points used by supervisors and peers in making these skill and ability versus motivation ratings are shown in ~~Figures~~<sup>Tables</sup> 18, 19, and 20.

Review of these ~~figures~~<sup>tables</sup> indicates that for AFSC 291X0 and AFSC 431X1-C, rating point 5 was the modal point for all task dimensions for both supervisors and peers. For AFSC 291X0 the percentage of such responses ranged from 50 to 87 for supervisors and from 61 to 83 for peers. For AFSC 431X1-C the percentage of such responses ranged from 45 to 84 for supervisors and from 49 to 76 for peers. In other words, for roughly one-half to four-fifths of the cases, supervisors and peers felt that incumbents were essentially working up to capacity. The results for AFSC 304X4 were in the same direction but were not quite as extreme. Rating point 5 was the modal response for 86 of the 92 task dimensions for supervisors and for 89 of the 92 task dimensions for the peers. For supervisors, 3 task dimensions had a modal response of 4 and for peers 3 task dimensions also had a modal response of 4. These were not, however, the same task dimensions. In addition, for supervisors 3 task dimensions had equal percentages responding 4 and 5. The percentages of no deficit responses for this career field were somewhat lower than similar responses for the other two career fields. They ranged from 37 to 66 for supervisors and 33 to 65 for peers. These data in conjunction with the generally lower mean task performance ratings reported previously for this career field tend to indicate that there may be a somewhat greater need for remedial action in this field than in the other two. Since the aptitude input for this field is equal to or higher than that for the other two career fields, the explanation for these slight differences must lie elsewhere. As indicated previously, the tasks for this career field tend to be highly technical and related to specific hardware items for many of which there are relatively close specified operational tolerances. Although the data do not supply a definitive answer, it is the feeling of the contractor staff that such task characteristics probably account for the obtained differences.

The rating point used second most frequently in all three career fields was 4 which indicated some deficit due largely to training needs. For



AFSC 291X0 the percentages of such responses ranged from 9 to 35 for supervisors and from 10 to 31 for peers. For AFSC 304X4 the percentages ranged from 4 to 47 for supervisors and from 15 to 48 for peers. For AFSC 431X1-C, the percentages ranged from 10 to 36 for supervisors and from 16 to 32 for peers. Thus the largest share of performance deficits from potential capacity were attributed to additional training needs in all three fields with this feeling being most strongly reflected in the AFSC 304X4 field.

Only a relatively small percentage of performance deficits were attributed largely to motivational factors. For AFSC 291X0 the percentages for the combined 1 and 2 categories ranged from 0 to 7 for both supervisors and peers. For AFSC 304X4 these percentages ranged from 1 to 14 for supervisors and from 2 to 20 for peers. For AFSC 431X1-C, the percentages ranged from 2 to 13 for supervisors and from 1 to 13 for peers.

Summary: From the skill and ability versus motivation ratings, it is clear that the majority of supervisors and peers <sup>report</sup> feel that a large percentage of incumbents in the three fields are usually working close to their potential capacity. When a deficit was reported these were more often attributed solely to skill deficits or a combination of skill and motivation deficits than they were solely to motivational deficits or motivational dominated mixtures with skill deficits. Slightly greater deficits were noted for AFSC 304X4 than for the other two career fields.

#### Relationships of Ratings Made by Supervisors and Peers of Same Incumbents

One of the questions arising from the use of any system of outside-observer rated performance concerns the extent to which two independent observers agree on the level of performance of the observed incumbent. Since multiple ratings for incumbents included in the original contractor sample were requested, data were available for determining the relationships between such ratings for that portion of the total sample. The multiple ratings were a mixture of supervisors and peers, depending on the returns received from the field for any given incumbent. In some cases, all multiple ratings were from supervisors, in others they were all from peers, and in many cases from a mixture of supervisors and peers. Rather than use an arbitrary weighting or averaging system, it was decided to use, for purposes of the analyses described in this section, only cases for which there was both a supervisor and a peer rating. For cases having more than one supervisor or one peer rating,

the one supervisor and one peer who responded to the largest number of task dimensions was selected as described previously. The number of cases reported therefore is those for whom a supervisor/peer pair of ratings was available.

A summary of the number of cases for which such pairs of ratings were available is shown in <sup>Table</sup> ~~Figure~~ 21. The number of incumbents in the original contractor sample for whom such pairs theoretically could have been available were 1034 for AFSC 291X0; 608 for AFSC 304X4; and 1074 for AFSC 431X1-C. The type of attrition of data that occurs in using a task level approach is illustrated by the difference between these maximum figures and the obtained figures for task dimensions shown in <sup>Table</sup> ~~Figure~~ 21. For AFSC 291X0, no pairs of data were available over half of the cases. Looking at it from another standpoint, data pairs were available for approximately half of the task dimensions for samples of only between 25 to 33 percent of the incumbent sample. The situation was essentially the same for AFSC 304X4. For AFSC 431X1-C, the data were slightly more plentiful. Data pairs were available for half the incumbent sample for 4 of the 55 task dimensions involved and for approximately half of the task dimensions for samples of between 33 to 37 percent of the incumbent sample. These data again point up the need for initial large samples to allow for meaningful samples at the individual task level. This characteristic is inherent in the use of the task level approach.

The obtained correlations between supervisor and peer ratings on each of the task dimensions are shown in <sup>Tables</sup> ~~Figures~~ 22, 23, and 24. For AFSC 291X0 the supervisor/peer correlations were significant at the 5% <sup>percent</sup> level for 30 of 51 performance task dimensions rated. For AFSC 304X4, the correlations were significant at the 5% <sup>percent</sup> level for 86 of the 92 task performance dimensions rated. And for AFSC 431X1-C, the correlations were significant at the 5% <sup>percent</sup> level for 46 of the <sup>55</sup> task performance dimensions rated. The range of correlations for the task performance ratings for the career fields were:

AFSC 291X0  
-.04 to .43

AFSC 304X4  
.09 to .96

AFSC 431X1-C  
.01 to .39

A summary of the obtained correlations is presented in <sup>Table</sup> ~~Figure~~ 25.

While the preponderance of the task dimension rating pairs were statistically significant at the 5% <sup>percent</sup> level, the bulk of the correlations were low to moderate. For AFSC 291X0 and AFSC 431X1-C approximately 60 percent were below .20. For AFSC 304X4 the correlations were substantially higher with

Table  
Figure 21

Summary of Numbers of Cases  
For Which Supervisor/Peer  
Pairs of Ratings Were Available

Number of Cases	AFSC 291X0				AFSC 304X4				AFSC 431X1-C			
	(51 Task Dimensions)				(92 Task Dimensions)				(55 Task Dimensions)			
	Performance N	A% A%	Motivation N	A% A%	Performance N	A% A%	Motivation N	A% A%	Performance N	A% A%	Motivation N	A% A%
500 through 549												
450 "												
400 "												
350 "												
300 "												
250 "												
200 "												
150 "												
100 "												
51 "												
Less than 50												
67												

NOTE: N = Number of Task Dimensions  
A% = Accumulated Percentage of Task Dimensions

Table

Figure 22

Correlations Between Task Ratings  
Made By Supervisors And Peers On The  
Same Incumbents From AFSC 291X0

Task Dimensions	Performance Ratings			Motivation Ratings		
	<u>r</u>	<u>N</u>	<u>Significance Level</u>	<u>r</u>	<u>N</u>	<u>Significance Level</u>
1	.24	389	.001	.23	349	.001
2	.24	173	.002	.25	169	.001
3	.34	163	.001	.33	154	.001
4	.05	358	.313	.15	352	.005
5	.30	105	.002	.18	107	.059
6	.43	108	.001	.34	102	.001
7	.21	293	.001	.22	285	.001
8	.12	305	.037	.09	292	.124
9	.22	373	.001	.20	371	.001
10	.24	335	.001	.13	332	.014
11	.25	324	.001	.21	320	.001
12	.33	311	.001	.23	316	.001
13	.21	394	.001	.08	383	.100
14	.05	324	.374	.07	308	.247
15	.29	400	.001	.29	382	.001
16	.26	353	.001	.24	345	.001
17	.16	201	.024	.18	196	.014
18	.22	402	.001	.19	388	.001
19	.17	343	.002	.17	340	.002
20	.07	361	.188	.09	353	.095
21	.07	309	.192	.09	301	.140
22	.15	278	.011	.14	268	.027
23	.10	234	.113	.06	229	.358
24	.13	202	.074	.01	200	.921
25	.03	255	.617	.01	253	.865
26	.17	354	.001	.10	345	.053
27	.13	322	.018	.22	310	.001
28	.34	243	.001	.22	242	.001
29	.36	220	.001	.29	229	.001
30	.15	245	.017	.11	243	.097
31	-.04	89	.739	-.05	86	.619
32	.06	78	.611	.04	72	.749
33	.04	125	.697	.17	118	.063
34	.13	121	.151	.09	113	.366
35	.05	45	.733	-.10	40	.547
36	.17	64	.180	-.04	61	.751
37	.01	102	.960	.05	97	.598
38	-.00	95	.921	-.12	91	.264
39	.15	88	.158	.01	84	.943
40	.18	179	.015	.14	175	.071
41	.28	190	.001	.11	187	.142
42	.31	178	.001	.19	176	.012



Table

**Figure 22**  
Correlations Between Task Ratings  
Made By Supervisors And Peers On The  
Same Incumbents From AFSC 291X0  
Cont'd

<u>Task Dimensions</u>	<u>Performance Ratings</u>			<u>Motivation Ratings</u>		
	<u>r</u>	<u>N</u>	<u>Significance Level</u>	<u>r</u>	<u>N</u>	<u>Significance Level</u>
43	.23	129	.010	.16	125	.068
44	.16	145	.057	.06	141	.461
45	.28	180	.001	.09	176	.235
46	-.01	196	.944	.11	191	.143
47	.13	250	.033	.06	243	.374
48	.01	83	.905	.22	84	.045
49	.10	282	.101	.06	280	.305
50	.14	256	.022	.04	240	.505
51	.02	257	.770	.03	259	.627

NOTE: Total number of incumbents for whom there could have been supervisor/peer pairs equals 1034

Table  
Figure 23

Correlations Between Task Ratings  
Made By Supervisors And Peers On The  
Same Incumbents From AFSC 304X4

Task Dimensions	Performance Ratings			Motivation Ratings		
	r	N	Significance Level	r	N	Significance Level
1	.31	117	.001	.27	115	.004
2	.33	113	.001	.19	107	.044
3	.46	227	.001	.26	215	.001
4	.31	76	.007	.31	78	.005
5	.25	275	.001	.11	263	.088
6	.27	261	.001	.26	252	.001
7	.34	243	.001	.23	240	.001
8	.09	124	.294	.10	125	.276
9	.26	125	.004	.25	124	.006
10	.27	124	.002	.18	117	.052
11	.34	102	.001	.18	100	.069
12	.41	43	.007	.14	41	.392
13	.21	35	.217	.21	34	.229
14	.25	21	.271	.30	20	.192
15	.38	45	.010	.07	42	.639
16	.41	83	.001	.19	80	.083
17	.20	103	.041	.24	99	.017
18	.17	91	.111	.13	89	.223
19	.34	140	.001	.22	139	.010
20	.36	142	.001	.25	140	.003
21	.25	275	.001	.16	271	.008
22	.22	206	.001	.17	204	.015
23	.51	14	.062	.09	15	.745
24	.73	15	.002	-.01	14	.963
25	.37	115	.001	.19	113	.050
26	.33	130	.001	.23	126	.011
27	.27	121	.003	.17	120	.064
28	.29	229	.001	.20	221	.003
29	.25	264	.001	.19	253	.003
30	.18	207	.008	.18	203	.010
31	.61	20	.005	.50	20	.024
32	.82	14	.001	.30	14	.302
33	.39	127	.001	.36	123	.001
34	.25	147	.003	.15	147	.071
35	.25	136	.003	.19	132	.033
36	.27	225	.001	.33	222	.001
37	.28	186	.001	.18	184	.013
38	.32	171	.001	.18	167	.020
39	.81	15	.001	.54	15	.037
40	.96	12	.001	.75	12	.005
41	.27	107	.006	.27	105	.006
42	.36	187	.001	.15	184	.048

Table  
Figure 23

Correlations Between Task Ratings  
Made By Supervisors And Peers On The  
Same Incumbents From AFSC 304X4  
Cont'd

Task Dimensions	Performance Ratings			Motivation Ratings		
	<u>r</u>	<u>N</u>	<u>Significance Level</u>	<u>r</u>	<u>N</u>	<u>Significance Level</u>
43	.34	196	.001	.32	193	.001
44	.41	110	.001	.29	105	.003
45	.65	17	.005	.55	17	.022
46	.56	14	.037	.52	14	.055
47	.41	138	.001	.28	134	.001
48	.34	122	.001	.27	116	.003
49	.35	224	.001	.26	219	.001
50	.39	187	.001	.24	183	.001
51	.47	103	.001	.32	101	.001
52	.70	13	.007	.70	13	.008
53	.65	12	.021	.24	12	.452
54	.41	133	.001	.34	131	.001
55	.33	121	.001	.26	120	.004
56	.28	221	.001	.20	217	.004
57	.40	287	.001	.17	285	.004
58	.40	256	.001	.25	248	.001
59	.46	106	.001	.24	102	.014
60	.29	137	.001	.20	134	.022
61	.27	188	.001	.18	186	.012
62	.60	60	.001	.31	57	.018
63	.33	139	.001	.16	137	.055
64	.32	195	.001	.25	191	.001
65	.34	202	.001	.15	200	.038
66	.41	197	.001	.26	196	.001
67	.31	265	.001	.25	264	.001
68	.37	242	.001	.27	239	.001
69	.33	135	.001	.14	133	.097
70	.32	271	.001	.22	267	.001
71	.38	268	.001	.23	266	.001
72	.39	250	.001	.26	251	.001
73	.29	167	.001	.27	165	.001
74	.37	33	.036	.17	33	.344
75	.58	16	.018	.33	15	.223
76	.84	10	.003	.31	10	.390
77	.28	170	.001	.13	168	.092
78	.42	112	.001	.37	111	.001
79	.27	101	.007	.44	99	.001
80	.37	194	.001	.32	194	.001
81	.33	279	.001	.20	276	.001
82	.44	261	.001	.25	264	.001
83	.25	113	.007	.14	113	.134
84	.66	37	.001	.35	37	.032

Table  
Figure 23

Correlations Between Task Ratings  
Made By Supervisors And Peers On The  
Same Incumbents From AFSC 304X4  
Cont'd

Task Dimensions	Performance Ratings			Motivation Ratings		
	<u>r</u>	<u>N</u>	<u>Significance Level</u>	<u>r</u>	<u>N</u>	<u>Significance Level</u>
85	.28	178	.001	.19	177	.014
86	.30	108	.002	.31	107	.001
87	.55	39	.001	.39	39	.014
88	.41	175	.001	.29	175	.001
89	.38	215	.001	.19	214	.005
90	.35	209	.001	.25	206	.001
91	.28	46	.060	.14	46	.347
92	.27	285	.001	.20	285	.001

NOTE: Total number of incumbents for whom there could have  
been supervisor/peer pairs equals 608



Table

Figure 24

Correlations Between Task Ratings  
Made By Supervisors And Peers On The  
Same Incumbents From AFSC 431X1-C

Task Dimensions	Performance Ratings			Motivation Ratings		
	<u>r</u>	<u>N</u>	<u>Significance Level</u>	<u>r</u>	<u>N</u>	<u>Significance Level</u>
1	.20	414	.001	.20	400	.001
2	.13	447	.005	.19	430	.001
3	.25	487	.001	.22	462	.001
4	.30	172	.001	.33	178	.001
5	.20	521	.001	.18	502	.001
6	.19	364	.001	.25	362	.001
7	.18	362	.001	.23	360	.001
8	.17	263	.006	.08	256	.203
9	.19	185	.008	.05	186	.474
10	.17	485	.001	.13	478	.005
11	.16	486	.001	.19	479	.001
12	.15	317	.007	.17	315	.003
13	.10	261	.124	.04	258	.482
14	.16	220	.020	.08	217	.233
15	.04	199	.542	.24	191	.001
16	.24	136	.006	.10	135	.236
17	.39	123	.001	.16	116	.080
18	.15	239	.021	.16	237	.014
19	.27	442	.001	.26	435	.001
20	.16	395	.002	.13	388	.010
21	.28	491	.001	.26	486	.001
22	.14	503	.002	.16	491	.001
23	.07	215	.314	.17	212	.014
24	.15	203	.036	.07	196	.305
25	.26	516	.001	.16	514	.001
26	.20	502	.001	.17	496	.001
27	.23	489	.001	.20	473	.001
28	.10	356	.051	.06	354	.267
29	.13	350	.016	.06	344	.275
30	.23	431	.001	.18	429	.001
31	.18	353	.001	.20	348	.001
32	.18	225	.008	.12	217	.073
33	.11	293	.052	.11	289	.056
34	.13	386	.013	.13	383	.011
35	.26	366	.001	.26	363	.001
36	.14	142	.093	.12	142	.141
37	.01	40	.934	.05	39	.785
38	.08	41	.634	.06	40	.714
39	.21	348	.001	.18	346	.001
40	.16	405	.001	.15	403	.003
41	.25	392	.001	.11	397	.023
42	.25	396	.001	.18	378	.001

Table

~~Figure~~ 24

Correlations Between Task Ratings  
Made By Supervisors And Peers On The  
Same Incumbents From AFSC 431X1-C  
Cont'd

Task Dimensions	<u>Performance Ratings</u>			<u>Motivation Ratings</u>		
	<u>r</u>	<u>N</u>	<u>Significance Level</u>	<u>r</u>	<u>N</u>	<u>Significance Level</u>
43	.30	196	.001	.13	198	.075
44	.31	193	.001	.25	193	.001
45	.26	190	.001	.18	190	.014
46	.20	250	.001	.17	247	.009
47	.20	105	.046	.07	103	.483
48	.20	396	.001	.18	389	.001
49	.15	73	.220	.11	70	.374
50	.11	437	.027	.12	436	.015
51	.11	424	.022	.14	423	.005
52	.19	463	.001	.15	460	.001
53	.23	285	.001	.16	283	.007
54	.14	393	.005	.17	384	.001
55	.13	386	.010	.19	386	.001

NOTE: Total number of incumbents for whom these could have been  
supervisor/peer pairs equals 1074

Table

Figure 25

Summary of Correlations  
Between Task Ratings Made by  
Supervisors and Peers on the Same Incumbent

Correlation Coefficient	AFSC 291X0				AFSC 304X4				AFSC 431X1-C			
	(51 Task Dimensions)		(92 Task Dimensions)		(55 Task Dimensions)		(55 Task Dimensions)		(55 Task Dimensions)		(55 Task Dimensions)	
	Performance	Motivation	Performance	Motivation	Performance	Motivation	Performance	Motivation	Performance	Motivation	Performance	Motivation
	N	A%	N	A%	N	A%	N	A%	N	A%	N	A%
-.01 through	2	4	4	8			1	1	2	4	1	2
.00	6	16	6	20					2	7	9	18
.05	6	27	12	43	1	1	2	3	12	29	12	40
.10	8	43	7	57			8	12	16	58	21	78
.15	9	61	8	73	2	3	22	36	11	78	6	89
.20	8	76	9	90	3	7	14	51	8	93	5	98
.25	6	88	3	96	24	33	22	75	3	98	1	100
.30	4	96	2	100	18	52	12	88	1	100		
.35	1	98	15	68	11	80	4	92				
.40	1	100	11	80	3	84	1	93				
.45			3	84	1	85	3	97				
.50			1	85	3	88	1	98				
.55			3	88	2	90						
.60			3	93	2	96						
.65			2	96	3	99						
.70			3	99								
.75			3	99								
.80												
.85												
.90												
.95												

NOTE: N = Number of Task Dimensions  
A% = Accumulated Percentage of Task Dimensions

only 4 percent being below .20. This AFSC also showed a few extremely high coefficients. Review of the task dimensions involved revealed that these tended to be ones for which there was an extremely limited number of cases. These cases may therefore be artifactual. Nevertheless, the obtained coefficients for this career field are substantially higher than for the other fields. ~~No definitive reason for this phenomena is readily apparent.~~ INSERT

#### Relationships Between Rated Task Performance and Predictor Variables

Description of Variables: As indicated earlier, the scope of the contract effort would permit analyses of only part of the data available in the basic tape data bank. As a result of a meeting between contractor and monitoring agency staff, a basic analysis plan involving rated task dimension performance and 25 predictors was developed. The rated task performance data were derived from responses from supervisors and peers on both task level performance and skill and ability versus motivation ratings. The predictors included the following variables

- Predictor 1: Incumbent's Grade. For the original contractor sample this was taken from the USAF Job Inventory completed by the incumbent. For the supplemental monitoring agency sample, this was taken from rating booklets completed either by the incumbents or supervisors.
- Predictor 2: Total Months at Present Base (Incumbent). These data were taken from the USAF Job Inventory completed by the incumbent and therefore were available only for members of the original contractor sample.
- Predictor 3: Total Months in AFSC (Incumbent). These data were also taken from the USAF Job Inventory completed by the incumbent and were therefore available only for members of the original contractor sample.
- Predictor 4: Total Months in Service (Incumbent). These data were also taken from the USAF Job Inventory completed by the incumbent and were therefore available only for members of the original contractor sample.
- Predictor 5: Decoding Test Score. Data were available for a portion of both the contractor and supplemental sample. This was also true for Predictors 6 through 17.
- Predictor 6: Memory for Landmarks Test Score
- Predictor 7: Complex Scale-Reading Test Score
- Predictor 8: Pursuit Test Score



- Predictor 9: Figure Analogies Test Score
- Predictor 10: Hands Test Score
- Predictor 11: Cubes Test Score
- Predictor 12: Mechanical Principles Test Score
- Predictor 13: Following Directions Test Score
- Predictor 14: Practical Estimation Test Score
- Predictor 15: Spatial Reasoning Test Score
- Predictor 16: Marital Status. These data were taken from question 114 of the Biographical Inventory. For this question, options B and C were coded as 2 and options A, D, and E were coded as 1.
- Predictor 17: Size of City of Origin. The data were taken from question 117 of the Biographical Inventory. For this question, option A was coded as 3, options B, C, and D were coded as 2, and option E was coded as 1.
- Predictor 18: Mechanical Aptitude Index. The data for this Predictor as well as for Predictors 19 through 25 were taken from the PACE Data tape supplied by the monitoring agency.
- Predictor 19: Administrative Aptitude Index
- Predictor 20: General Aptitude Index
- Predictor 21: Electronics Aptitude Index
- Predictor 22: Sex. For this variable, Female was coded as 1 and Male was coded as 2. This variable was only relevant for AFSC 291X0 in which there were female incumbents.
- Predictor 23: Year of Enlistment. This variable is somewhat redundant with Predictor 4 but was included since data for Predictor 4 were only available for the original contractor sample.
- Predictor 24: Educational Level. This variable represents a scale indicating how far an individual had progressed in his academic education from not having completed high school through having attained a doctorate degree. A scale from 1 to 9 was generated from the coding categories used by the monitoring agency. ~~The coding for this variable was as follows:~~

*as follows:*

- 1 = elementary school, graduated or not
- 2 = high school, one through three years
- 3 = completed high school equivalency tests but has no diploma
- 4 = high school graduate
- 5 = one or more years of college, includes an AA degree, or a graduate of a diploma school program, including Registered Nurse, but not a 4-year college diploma
- 6 = one or more bachelor's degrees, includes optometry and podiatry
- 7 = master's candidate under USAFIT
- 8 = master's degree and above in anything less than a doctorate
- 9 = all earned doctor's degrees, also LLB and JD

Zero order correlations were calculated between predictor scores and the task dimension performance ratings for supervisors, peers, and a supervisor/peer composite. These correlations for AFSC 291X0 are contained in Appendix B, for AFSC 304X4 in Appendix C, and for AFSC 431X1-C in Appendix D. *These appendices have been deposited with*

Format Description. The number of Pearson zero order correlation coefficients statistically significant at the <sup>percent</sup> 5% level ~~are~~ <sup>is</sup> summarized by predictors in the following sections. In Appendices B, C, and D where all of the coefficients are shown, the first number in each cell is the correlation coefficient. The second cell entry shown in parentheses is the number of cases for which the coefficient as calculated. The third cell entry starting with "S=" is the statistical significance level. In Appendices B, C, and D the variables are identified as PEER 001, PEER 002, etc. In the computer printouts from which these were extracted, the variables are identified either as PEER 001 or SUP 001, etc. At the beginning of Appendix B, C, and D there is an identification listing which relates each of these variable numbers to the actual task dimension in the Performance and Skills and Ability Versus Motivation Rating booklet. All odd numbered variables represent task performance levels and all even numbered variables represent skill and ability versus motivation judgments. Because of the nature of the <sup>assumed</sup> underlying <sup>scale</sup> continuum described earlier, these latter relationships should be interpreted with caution.

Incumbent's Grade: The number of significant correlations between this predictor and the task dimensions <sup>is</sup> ~~are~~ shown below. The number in parentheses following the AFSC designation indicates the total number of task dimensions for that career field.

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	15	13	18	8	6	9
AFSC 304X4 (92)	61	43	52	14	28	31
AFSC 431X1-C (55)	22	35	20	24	30	15

Incumbent's grade was more predictive of task level performance in AFSC 304X4 and in AFSC 431X1-C than in AFSC 291X0. In the 304 field it was most closely related with peer ratings, secondly with composite supervisor/peer ratings and <sup>thirdly</sup> ~~third~~ with supervisor ratings. In the 431 field the order

was somewhat reversed. Grade was most highly correlated with supervisor ratings, next most highly with peer ratings, and third with composite supervisor/peer ratings. In the 291 field in which grade was not related significantly to the same extent, the order was composite highest, peer second highest and supervisor third. Across all three career fields, this variable predicted performance for between one-third to two-thirds of the task dimensions involved. The pattern of correlations for the skill and ability ratings was scattered but generally lower than that for the performance ratings.

Incumbent's Total Months at Present Base:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	13	25	27	25	6	22
AFSC 304X4 (92)	2	14	10	1	37	7
AFSC 431X1-C (55)	2	13	8	3	5	20

Except for AFSC 291X0 this variable was predictive for less than one-quarter of dimensions involved. For 291X0, however, it was predictive of about half the dimensions involved and was most predictive of the composite task ratings. For the other two career fields, it was most predictive of supervisor performance ratings. The pattern of skill and ability ratings showed relatively large differences between peer, supervisor, and composite ratings across the three fields with each being predominant in one career field.

Incumbent's Total Months in AFSC:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	9	9	8	4	0	2
AFSC 304X4 (92)	58	3	29	3	9	8
AFSC 431X1-C (55)	4	19	6	7	11	3

This variable was not very predictive for AFSC 291X0 but was predictive of over half the peer performance and about one-third of the composite performance ratings for AFSC 304X4. It was also predictive of about one-third of the supervisor performance ratings for AFSC 431X1-C. It was considerably less predictive of the skill and ability ratings across all fields.



Incumbent's Total Months in Service:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	6	9	8	3	0	4
AFSC 304X4 (92)	57	9	47	13	20	23
AFSC 431X1-C (55)	6	11	5	10	7	3

This variable showed essentially the same pattern as the previous variable. Except for AFSC 304X4 it was predictive of less than one-quarter of the dimensions involved. For AFSC 304X4, however, it predicted over half the peer and composite performance ratings. It was considerably less predictive of the skill and ability ratings.

Decoding Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	3	0	0	4	1	4
AFSC 304X4 (92)	0	6	3	0	1	3
AFSC 431X1-C (55)	2	3	3	2	2	1

This variable had little predictive value across all three career fields.

Memory for Landmarks Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	7	5	4	9	3	8
AFSC 304X4 (92)	6	24	3	0	13	3
AFSC 431X1-C (55)	4	1	2	2	2	1

For supervisor performance ratings for AFSC 304X4, this variable was predictive for a little more than one-quarter of the dimensions involved. Other than that, it was essentially non-predictive.

Complex Scale-Reading Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	7	1	9	1	1	6
AFSC 304X4 (92)	3	2	0	0	1	1
AFSC 431X1-C (55)	3	1	11	11	4	11

This variable predicted less than one-quarter of the dimension ratings for all career fields.

Pursuit Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	3	0	3	0	0	1
AFSC 304X4 (92)	1	1	1	8	1	13
AFSC 431X1-C (55)	1	9	11	13	5	21

This variable had little predictive value for performance ratings across all three career fields. It had a modest predictive value for the skill and motivation ratings in AFSC 431X1-C.

Figure Analogies Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	9	5	8	7	5	7
AFSC 304X4 (92)	3	18	2	1	16	3
AFSC 431X1-C (55)	1	9	1	3	1	1

Except for supervisor performance and skill and ability ratings for AFSC 304X4, this variable had little predictive value. Even for AFSC 304X4 its predictive value was modest.

Hands Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	3	3	0	2	2	2
AFSC 304X4 (92)	1	8	4	2	4	2
AFSC 431X1-C (55)	3	3	1	4	4	3

This variable had little predictive value across all three career fields.

Cubes Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	1	1	0	0	3	0
AFSC 304X4 (92)	5	5	10	1	1	4
AFSC 431X1-C (55)	2	0	6	3	1	0

This variable also had little predictive value across all three career fields.

Mechanical Principles Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	0	0	0	1	2	0
AFSC 304X4 (92)	15	42	32	11	22	33
AFSC 431X1-C (55)	5	2	5	5	2	5

This variable showed dramatic differences between the ratings for AFSC 304X4 and the other two career fields. For AFSC 304X4 this variable was predictive of two-fifths of the supervisor and about one-third of the composite performance ratings. It was also somewhat less predictive of the supervisor and composite skill and ability ratings. On the other hand, the variable had very little predictive value for any of the ratings in the other two career fields.

Following Directions Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	2	0	1	0	0	3
AFSC 304X4 (92)	4	13	3	4	10	1
AFSC 431X1-C (55)	1	1	2	3	1	2

Although this variable was somewhat more predictive of supervisor ratings for AFSC 304X4 than for the other career fields, its value was modest at best.

Practical Estimations Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	8	9	3	2	5	2
AFSC 304X4 (92)	0	16	9	3	2	3
AFSC 431X1-C (55)	3	2	3	0	1	3

This variable had little predictive value for most dimensions across all three career fields.

Spatial Reasoning Test Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	1	1	1	0	4	2
AFSC 304X4 (92)	7	2	9	12	2	2
AFSC 431X1-C (55)	2	3	3	0	0	1

This variable had little predictive value for most dimensions across all three career fields.

Marital Status:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	6	9	10	18	6	13
AFSC 304X4 (92)	6	6	4	2	12	1
AFSC 431X1-C (55)	0	1	1	0	1	0

This variable also had little predictive value for most dimensions across all three career fields. It did have a modest predictive value in AFSC 291X0 for composite performance ratings and peer and composite skill and motivation ratings in this career field.

Size of City of Origin:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	1	3	4	1	0	2
AFSC 304X4 (92)	2	2	2	1	0	2
AFSC 431X1-C (55)	1	15	4	1	15	8

This variable had little predictive value for most dimensions across AFSC 291X0 and AFSC 304X4. For AFSC 431X1-C, however, it was predictive of over one-quarter of the supervisor performance and skill and ability ratings.

Mechanical Aptitude Index:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	3	11	1	0	10	1
AFSC 304X4 (92)	10	2	3	1	3	0
AFSC 431X1-C (55)	15	5	9	9	6	4

This variable showed some modest predictive value of supervisor ratings in AFSC 291X0 and with peer performance ratings in AFSC 431X1-C.



Administrative Aptitude Index:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	1	24	3	11	17	9
AFSC 304X4 (92)	3	2	1	8	1	4
AFSC 431X1-C (55)	0	2	2	0	1	0

This variable had little predictive value for AFSC 304X4 and AFSC 431X1-C. However, it was predictive of about half of the supervisor performance ratings, one-third of supervisor skill and ability ratings and about one-quarter of peer skill and ability ratings for AFSC 291X0. Since this variable is one of the entry controls for this career field, the higher predictive value for supervisor performance ratings seems consistent. That the same was not true for peer performance ratings is perhaps somewhat surprising.

General Aptitude Index:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	0	5	1	3	3	2
AFSC 304X4 (92)	3	1	2	0	1	0
AFSC 431X1-C (55)	2	1	2	2	0	0

This variable had little predictive value for most dimensions across all three career fields.

Electronic Aptitude Index:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	1	8	0	2	9	2
AFSC 304X4 (92)	8	12	15	0	4	4
AFSC 431X1-C (55)	2	0	0	0	0	0

This variable had surprisingly little predictive value for AFSC 304X4 for which it is an entry control and very little predictive value for the other two career fields as might have been expected.

Sex: This variable had meaning only for AFSC 291X0 which had a reasonable number of female incumbents.

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	2	6	6	3	4	1

This variable had little predictive value for this field.

Year of Enlistment: This variable parallels the previously reported Incumbent's Total Months in Service which was derived from a different source.

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	5	12	12	7	3	3
AFSC 304X4 (92)	50	15	24	4	9	7
AFSC 431X1-C (55)	8	45	10	20	32	14

The basic pattern of the earlier relationships held true for AFSC 291X0 and AFSC 304X4. However, for AFSC 431X1-C this variable was highly predictive of supervisor performance ratings and to a lesser extent of peer and supervisor skill and ability ratings.

Education Level:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	2	4	0	4	3	0
AFSC 304X4 (92)	71	23	57	46	8	36
AFSC 431X1-C (55)	20	35	14	12	20	7

Although this variable had little predictive value for AFSC 291X0, it had considerable predictive value for the other two career fields. For 304X4 it was most highly predictive of peer and composite performance ratings and the peer and composite skill and ability ratings. For AFSC 431X1-C, it was most predictive of supervisor performance, followed by peer performance and supervisor skill and ability ratings.

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AFQT Score:

	Performance Level			Skill/Ability vs. Motivation		
	Peer	Supv	Comp	Peer	Supv	Comp
AFSC 291X0 (51)	2	7	2	4	5	4
AFSC 304X4 (92)	4	1	1	0	0	1
AFSC 431X1-C (55)	3	1	1	7	1	0

This entry level general ability variable had relatively little predictive value for most dimensions across all three career fields.

Summary: In terms of zero order correlation coefficients between rated task dimensions and the 25 predictor variables, the emerging patterns showed few outstanding trends. Since each task dimension represented a relatively minute segment of an incumbent's total job, it is not unusual that these zero order coefficients rarely exceeded .20. Nevertheless, because of the number of cases involved even relatively modest coefficients showing some correlation between predictors and task level criteria were statistically significant at the 5% level. Of course when dealing with large numbers of coefficients one should keep in mind that one out of twenty showing a relationship at the 5% percent level may still be expected to be purely chance phenomena.

From a review of these zero order coefficients one can conclude several things. First, almost all of the predictors showed a statistically significant relationship with one or more of the task dimension level criteria from one of the three career fields. Second, there was no clear cut superiority of either supervisor, peer, or supervisor/peer composite ratings in terms of the number of dimensions for which a statistically significant relationship was found. <sup>Table</sup> Figure 26 shows a summary of the rank order of numbers of predictors by source of performance ratings. This table shows a slight tendency for supervisor performance ratings in AFSC 291X0 and AFSC 431X1-C to be significantly correlated with more predictors than peer or composite ratings. For AFSC 304X4, there is a slight tendency for peer performance ratings to be significantly correlated with more predictors than supervisor or composite ratings. The tendencies however are very slight and all sources were ranked first for some task dimensions and also last for other task dimensions. Third, there are both inter- and intra-career field differences for the different predictor variables.

In this summary review no attempt was made to look up the precise nature of some of the task dimensions showing differences in order to hypothesize why such differences might have occurred. The review was mainly to determine whether or not and the extent to which the task level approach was able to demonstrate differential prediction of the various task dimension criteria generated. Some differential prediction was demonstrated. Whether or not the practical significance of the differential prediction achieved is deemed worthy of the effort put forth to achieve it remains moot. ~~It may be worth noting the predictive superiority of some of the non-test variables over the test score mediated variables.~~ (Other data will be used.)



Table  
Figure 26  
Rank Order of Number of Predictors  
by Source of Performance Ratings

Rank	AFSC 291X0			AFSC 304X4			AFSC 431X1-C		
	Peer	Supv	Comp	Peer	Supv	Comp	Peer	Supv	Comp
1	4	9	5	10	8	3	4	8	4
1 1/2	4	5	3	1	1	0	4	5	7
2	8	6	8	6	5	14	6	1	6
2 1/2	1	1	2	1	2	1	2	3	3
3	8	4	7	6	8	6	8	7	4
TOTAL	25	25	25	24	24	24	24	24	24